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A.M.A. CONVENTION • KANSAS CITY, MO. • MAY 11-15, 1936

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The Western Journal of Surgery, Obstetrics and Gynecology closes its two-and-a-half page review of this fine work with these words:

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THE MODERN TREATMENT OF SURGICAL SHOCK

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PHILADELPHIA

The subject of traumatic shock is perennial; like our poor relations it is always with us. It has provided a veritable storehouse of controversy. Theories as to the causation of shock as advanced even today and championed so vigorously are such that many of the papers on this subject have the tenor of a debating society about them. And yet the condition we know as shock was known to the ancients although not designated by this term until 1795, when James Latta [1] so termed it. In dealing with a subject on which so much thought and experimentation have been expended, it is of particular interest to look back a few years to find out what was known of the subject a generation ago. Fifty years ago that peer of surgeons D. Hayes Agnew [2] discussed shock, and many of his observations appear quite modern. The symptoms associated with shock as observed by Agnew are much the same as they are known today. Agnew defined shock as a "term used to express the collective phenomena which follows the infliction of some violence to the body through the nervous system." The causes of shock were classified as psychical and physical.

Just how much actual shock can be produced by psychic trauma is difficult to say but every physician has seen patients who have responded to an apparent psychic injury by the symptoms of mild primary shock. I recall the case of a sturdy man who came to the operating room with his blood pressure so low that operation had to be deferred and restoratives given. Later I found the cause of his dilemma. A substitute orderly had prepared him for operation, and in the conversation that ensued the patient was told by the orderly that he was going to have an operation from which he had seen no one recover.

Shock was expected in Agnew's day, just as it is today, to follow severe physical trauma. For the treatment of shock Agnew advised placing the patient in the recumbent position with the head low, with the application of external heat and blood transfusion if there had been loss of blood. In cases in which there was engorgement of the right side of the heart, bleeding was to be resorted to. Stimulants were to be carefully given, brandy and whisky by mouth, subcutaneously or by rectum.

But the concept of the mechanism of shock has been changed since Agnew's day. Agnew quotes Mitchell, Keen and Moorehouse, who made their observations during the Civil War and who felt that the medulla and the pneumogastric nerve were chiefly concerned in initiating the condition of shock, but he himself felt that the central factor in shock was more widespread. Agnew accounted for the pooling of blood in the "deep venous trunks by associating together feebleness of the heart and paralysis of the walls of the blood vessels." He did not hit far amiss of the mark. The fall in temperature Agnew explained on the basis of a temporary arrest of tissue metamorphosis. Today, in spite of the more accurate data concerning the state of the organism, during the condition termed shock there is no unanimity of opinion as regards the actual mechanism of the initiation of the condition.

I shall review hastily some of the various theories regarding the cause of shock. Crile's [3] theory that the marked physiologic and nervous depression associated with shock is the result of exhaustion of the vital nerve centers received widespread attention until it was shown by Forbes and his co-workers that the changes in the central nervous system were the result and not the cause of shock. In addition, Dolley,[4] Janeway and Ewing [5] and Cannon [6] produced evidence to discount this theory. Notwithstanding the mass of evidence against this theory, it is occasionally reviewed. O'Shaughnessy and Slome [7] in January 1935 published data on experiments on traumatic shock and discussed their data in relation to Crile's [3] theory.

For a time Yandell Henderson's [8] theory held a prominent place in all discussions on shock. Henderson believed that the loss of carbon dioxide from the body was the initiating factor in shock; closely allied with this view was the question as to whether or not acidosis might be the factor of prime importance in shock. The effect of the loss of carbon dioxide by hyperventilation and its relation to shock was studied also by Janeway and Ewing,[5] and Mann [9] studied the effects of a possible loss of carbon dioxide through the opened abdomen. But experiments indicate that the loss of carbon dioxide is not the cause of shock. As regards the relation of acidosis to the cause of shock, the experiments of the Medical Research Committee [10] showed that a marked acidosis could be produced by the injection of acid without producing shock.

Read before the Section on Miscellaneous Topics, Session on Military Medicine, at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

1. Latta, James: A Practical System of Surgery, Edinburgh, 1795 (cited by Kinnaman, G. C.: Ann. Surg. **38:** 846, 1903).
2. Agnew, D. H.: Principles and Practice of Surgery, Philadelphia, J. B. Lippincott Company **2:** 376, 1881.
3. Crile, George: Surg., Gynec. & Obst. **37:** 342 (Sept.) 1923.
4. Dolley, D. H.: J. M. Research **20:** 275, 1909; **21:** 95, 1909; **22:** 331, 1910.
5. Janeway, H., and Ewing, E.: Am. J. Surg. **59:** 158, 1914.
6. Cannon, W. B.: Studies in Experimental Traumatic Shock, Arch. Surg. **4:** 1 (Jan.) 1922.
7. O'Shaughnessy, Laurence, and Slome, David: Brit. J. Surg. **22:** 589 (Jan.) 1935.
8. Henderson, Yandell: Am. J. Physiol. **21:** 126, 1908.
9. Mann, F.: Bull. Johns Hopkins Hosp. **25:** 205, 1914.
10. Medical Research Committee: Reports of the Special Investigation Committee on Surgical Shock and Allied Conditions, London, His Majesty's Stationery Office **7:** 245, 1919.

Following the work of Dale, Laidlaw and Richards [11] on the relationship between histamine and shock, a theory was advanced that shock was caused by the liberation of toxic substances generated at the site of the injury. Histamine or histamine-like substances were known to occur in injured tissues, and varying degrees of a shocklike state could be produced by the injection of histamine. Cannon and Bayliss [12] found that when a cat's thigh was traumatized shock did not result if the blood supply to the extremity was excluded, even though the nerve supply to the limb was intact. That toxemia per se was not the cause of shock was suggested by the work of Parsons and Phemister,[13] who injected the blood drawn from the femoral veins of the traumatized limb of dogs and reinjected this material into normal animals without producing shock.

Recently Freeman [14] has postulated that the phenomena of shock may be explained on the basis of hyperactivity of the sympathetico-adrenal system. By the repeated injections of epinephrine he was able to reduce the blood volume in animals, a fact previously established by Gasser, Erlanger and Meek.[15] In addition, Freeman [14] caused a reduction in blood volume by the initiation of "sham rage" in cats in which the cerebral cortex had been destroyed. With associated paralysis of vasoconstrictor fibers by ergotoxine or after a complete sympathectomy, injections of epinephrine or "sham rage" did not cause a reduction of blood volume and shock did not result.

Speaking still of recent theories advanced for the causation of shock, Swingle and his associates [16] stated that the manifestations of surgical shock and deficiency of the adrenal cortical hormone were similar, and they thus proposed the use of adrenal cortical extract in the treatment of shock. Since shock and a deficiency of the adrenal cortical hormone are not related, it is apparent that this theory adds nothing of value to the treatment of shock. Furthermore, the adrenal cortical extract has a slow, prolonged action and, if used in the treatment of shock, its effect will not be manifest until it is too late to meet the emergency.

When so many theories are advanced for the explanation of a condition, it is generally conceded that no one theory can be accepted. This naturally does not preclude the possibility of finding some truth in any one or in all the theories. But the theories cited have provided facts that may be used to advantage.

During the World War the problem of traumatic shock naturally again came to the forefront. Some advances both in its prevention and in its treatment were made, but under the stress of military emergencies conditions for experimental work and careful observation were not always of the best. The large number of cases seen by the military surgeon in combat in a short time could not be duplicated in civil practice even in the most active traumatic surgical service. Despite the tense situation of the World War, valuable contributions were made, and the publications on shock by the Medical Research Committee, the combined observations of both British and American medical officers, are of outstanding interest.

Following the armistice the study of shock from the experimental standpoint was revived. This included not only a critical analysis of existing theories but an attempt to determine the conditions that prevailed in the organism during traumatic shock. It is in this respect that the postwar study of shock has excelled and, despite the controversial points relating to the nature and cause of shock, certain phenomena are now recognized and accepted.

Unquestionably the most striking phenomenon associated with traumatic shock is the decrease in blood volume and the loss of the fluid elements that eventuate in a concentration of the corpuscular elements. It has been assumed, following the work of Dale, Laidlaw and Richards,[11] that the loss of fluid is due to a change in the permeability of the finer vessels of the circulatory tree. In traumatic shock the plasma proteins fall in spite of the fact that the concentration of the hemoglobin increases. One must therefore assume that in this condition the plasma proteins pass from the blood into the intercellular fluids and, as a result of their osmotic effect, draw an additional amount of fluid from the circulation. Acknowledgedly every injury to the tissues is followed by local changes in the circulation. When the injury is severe not only fluid but the cellular elements of the blood gain access to the tissue spaces, and when this transudation is severe enough there occurs a change in the blood volume.[17] Do not these observations adequately explain the reduction in the circulating blood volume and the consequent fall in blood pressure? When the blood pressure or blood volume falls to a critical level, further transudation of fluid from the vessels takes place and the plasma proteins and blood volume decrease simultaneously. Hence in recent years we have come to consider shock as due solely to the loss of fluids into the tissues outside the vascular system.

Freeman noted that dehydration stimulated medulloadrenal secretion and like injections of epinephrine reduced blood volume. He maintained that arterial constriction rather than dilatation better explained the phenomena of shock. Arterial constriction tends to slow the blood stream and in turn would lead to stasis in the capillaries and the escape of fluid and protein with its attending reduction of the blood volume.

But regardless of the mechanism, the loss of blood volume is a definite reaction to tissue injury and must be reckoned with in treatment. To be sure, fear, anxiety, pain, cold, dehydration and fatigue are contributing factors.

The restoration and maintenance of blood volume may be accepted then as of basic importance in the treatment of shock, and the problem of treating shock is inseparably connected with the maintenance of blood volume. When the degree of shock is severe, no matter what the theories, any or all of the methods of treatment may fail. Paradoxically, it may be said that the time to begin the treatment of shock is before its onset. As preventive measures one must consider the alleviation of pain, of fear and of anxiety. It has been suggested [7] that shock may be relieved by spinal anesthesia, even though the blood pressure is already low. Spinal anesthesia would of course relieve pain, but it is questionable whether it is wise to introduce an additional blood pressure lowering agent in shock, even though certain experiments on animals are reported in which a low blood pressure rose following spinal anesthesia. Mor-

11. Dale, H. H.; Laidlaw, P. P., and Richards, A. N.: Medical Research Committee, No. 26, 1919, p. 9.
12. Cannon, W. B., and Bayliss, W. M.: Medical Research Committee: Special Report Series No. 25, London, His Majesty's Stationery Office, 1919.
13. Parsons, Eloise, and Phemister, D. B.: Surg., Gynec. & Obst. **51**: 196 (Aug.) 1930.
14. Freeman, N. E.: Am. J. Physiol. **103**: 185 (Jan.) 1933.
15. Gasser, H. S.; Erlanger, J., and Meek, W. J.: Am. J. Physiol. **50**: 31 (Oct.) 1919.
16. Swingle, W. W.; Pfiffner, J. J.; Vars, H. M.; Bott, P. A., and Parkins, W. M.: Science **77**: 58 (Jan. 13) 1933.
17. Blalock, Alfred: Experimental Shock, Arch. Surg. **20**: 959 (June) 1930.

phine is a valuable adjunct to other forms of treatment and prompt attention to the source of painful stimuli is important.

In the treatment and prevention of shock the prevention of psychic trauma too often is overlooked. Intangible as the factor is, I can best illustrate what I mean by recalling the value of what is termed "vocal anesthesia" in conjunction with spinal or local anesthesia. Not only do patients whose mental processes are diverted from the disconcerting ordeal complain less about the operative procedure, but in the case of spinal anesthesia, in which a fall in blood pressure is not unusual, there is stabilization of the pressure. The ability to distract the patient's attention in the treatment of shock is of value in the alleviation of pain. Reassurance to the patient by different means is helpful and taxes the resources of the surgeon.

Lowering the head of the patient and the application of external heat have long been known and accepted as routine procedures.

But if one recognizes the loss of blood volume as the essential etiologic factor, the restoration of blood volume must be acknowledged as the predominant and indispensable agent. In mild shock, intravenous therapy at times causes an immediate relief of symptoms. However, if the patient is losing fluid from the blood stream rapidly and continuously the addition of more fluid is of little service unless the solution can be kept within the circulation. Adequate circulation can be maintained for a short period of time by the introduction of a solution of 10 per cent dextrose and physiologic solution of sodium chloride, but there is need for a solution that diffuses less rapidly. For this reason blood is more efficacious; but if blood is not readily available an acacia solution may be substituted.

During the World War acacia was suggested as a substitute for blood in the treatment of shock by the British physiologist Bayliss.[18] At that time the difficulty of obtaining a pure preparation discouraged the use of acacia and it was almost universally abandoned. Today, however, reliable preparations of acacia in ampules are on the market and may be used without fear of harmful reactions. I have employed this agent when there was need for the rapid restoration and maintenance of fluid volume and have seen no ill effects when it was given in proper concentration. Acacia has again come to the fore in that it is available in stock and convenient containers.

For a time during the World War it was thought that, since there is an associated acidosis in shock, solutions of sodium bicarbonate might be given intravenously to some advantage. Cannon[19] treated several soldiers by this method and was able to cause a transient rise in blood pressure, but this method of treatment was short lived. It has, however, during this year been revived by Coonse and his associates.[20] It is sufficient to say that the use of a sodium bicarbonate solution is not without danger should it cause an uncompensated alkalosis. In fact I can see no particular advantage in bicarbonate solutions when the same results may be obtained by the much less dangerous physiologic sodium chloride and dextrose solutions.

Recently my attention has been called to the beneficent effect of 10 per cent ethyl alcohol in 10 per cent dextrose given slowly, and this I have employed to advantage. As much as 2 liters may be given intravenously in twenty-four hours. Patients receiving this solution experience a feeling of warmth and well being. Alcohol in the form of whisky or brandy has long been considered valuable for its stimulating effect and, in addition to its stimulating effect, affords easily available calories.

It must be admitted that during the postwar period definite advances were made in that there was a more accurate understanding of the phenomena of shock, although the mechanism is still not well understood.

How may the treatment of shock be summarized? Primarily, in the removal of all contributing causes. These are not only associated with physical trauma but include psychic, nervous and humoral aberrations. I am not unmindful of the effect of pitressin in maintaining blood pressure and of the stimulating effect of caffeine. But above all these I would emphasize employment of agencies to maintain blood volume. These include saline and dextrose solutions, dextrose and alcohol solutions, solutions of acacia and last, but not least, blood transfusion.

Finally, what is the difference between the treatment of shock in civil life and that in military engagements? It is acknowledged that the treatment of shock should begin at the earliest possible moment, and the treatment of shock in wartime is a matter of organization. How much treatment can be carried out at the first aid stations and how promptly can the injured be transported to field hospitals? These are problems that must be left to the military surgeon, who must keep constantly before him the importance of the avoidance of every unnecessary delay in applying the essential remedies.

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19. Cannon, W. B.: Medical Research Committee: Special Committee Report II, 1919, p. 96.
20. Coonse, G. K.; Foisie, P. S.; Robertson, H. F., and Aufranc, O. E.: New England J. Med. **212**: 647 (April 11) 1935.

ABSTRACT OF DISCUSSION

DR. CHARLES C. LUND, Boston: There is no question that the real treatment for the severe case is replacement of blood. I believe with Blalock and many others that on a quantitative basis the loss of circulating fluid is the essential thing in the picture to which treatment should be directed. There is some unpublished work of Dr. Nowak of the Boston City Hospital, with some elaborate cross circulation experiments, which goes far to confirm this point of view. In every way he seems to show that the loss of fluid into the tissues, even when there is no external hemorrhage, produces the largest proportion of the shock in the typical animal experiment. I am in complete agreement with Dr. Frazier that I would hesitate to use sodium bicarbonate at the present moment. Pure acacia solves some of the problems when blood is not immediately available and may be of tremendous importance at first aid stations. I think, though, that the acacia problem is not finished. Acacia stays in the blood a long time. It has been recovered six months or longer after introduction. It is a gummy solution and, according to a pharmacologist, tends to coat and clog the capillaries in the liver. In reasonable amounts, I am sure that it can do nothing but good, but I think that repetitions of doses of acacia, say, 500 cc. three or four times in twenty-four hours, and three or four times more in the next twenty-four hours, might be bad, and I would like to see animal work done to find what the upper limit of tolerance of acacia in the way of dosage is. As for alcohol, that is a little shocking to the teaching that I have received in physiology. I am interested to hear that its use for shock has been observed by Dr. Frazier and found to be of benefit. The old shock enema with alcohol in the form of whisky and so on I have always felt was one of the worst things that could be used. Of course, about 10 cc. of pure alcohol per hour would not overload the system at any one time and would be an available source of fuel.

DR. NORMAN E. FREEMAN, Boston: At the Massachusetts General Hospital we have been studying the peripheral distribution of blood to the tissues of the body in cases of shock.

The blood flow in the hand has been determined both in patients presenting the classic picture of shock and in patients whom we believed to be on the road to such a condition. It may briefly be stated that the blood flow in the hand is markedly reduced and may actually be zero in severe cases. This fact is quite in accord with the clinical picture of cold extremities and empty veins, which will not fill with blood even when a venous tourniquet is applied. In other experiments we have tried to analyze the various factors, acting in the clinical cases, which may reduce the peripheral blood flow. The results seem to show that cold, pain, fear and asphyxia depress the peripheral circulation. It is well recognized that these stimuli, together with dehydration and hemorrhage, are all potent factors in producing shock. The consequences of a diminished blood flow are tissue asphyxia and acidosis. Landis has shown that tissue asphyxia leads to an increase in the permeability of the capillaries, allowing plasma to leak out. If the reduced circulation in the hand in cases of shock were also present throughout the body, it can readily be seen how the blood volume would be still further reduced by loss of plasma through asphyxiated capillaries. As Dr. Frazier has brought out, the essential dominant feature in shock is a reduced effective blood volume. Any method that raises the blood volume will increase the vital flow of blood to the tissues and thus not only prevent further loss of plasma but actually bring back the blood that is stagnant in the peripheral tissues. The treatment of shock, as Dr. Frazier has stated, depends to a large extent on the early restoration of an effective blood volume.

THE TREATMENT OF ACUTE ALCOHOLISM

WITH TEN PER CENT CARBON DIOXIDE AND NINETY PER CENT OXYGEN INHALATION

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AND
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BOSTON

For many years the Fifth Medical Service of the Boston City Hospital has been in charge of almost all medical alcoholic patients admitted to this hospital. It is estimated that approximately 700 alcoholic patients are admitted to this service for treatment each year. The opportunity has been present, therefore, to study alcoholism in all its phases.

The acute alcoholic patient [1] generally can be given a good prognosis as to recovery. For this reason, even when medical aid is sought for him, he receives little active therapy. In the paralytic stage of acute alcoholic poisoning, however, emergency treatment may be life saving. Patients in this stage present a picture best described by Sollmann,[1] who states that the symptoms are those of beginning medullary paralysis. Respiration is slow and stertorous, the pulse is scarcely discernible, the skin is cold and cyanotic, the pupils are generally dilated, the reflexes are abolished, the temperature may fall severely. Though death is relatively uncommon, the coma may become deeper and terminate in paralysis of respiration or of the heart, or in pulmonary edema. The patient may die within half an hour after the onset of this paralytic stage. If coma lasts beyond thirteen hours, recovery is rare. Death may also occur later after a prolonged debauch as a result of gastric irritation and hemorrhage [2] or of exhaustion. By analogy with animals it would require about a pint of whisky taken at once to cause coma in man.[1]

As it was felt that the best way to combat the condition caused by the ingestion of alcohol would be to remove or lessen the alcohol concentration in the body, rather than merely treat the symptoms of alcoholic depression, a consideration was given to the metabolism of alcohol. Obviously, oxidation of alcohol by the body leads to recovery from acute alcoholism.

METABOLISM AND EXCRETION OF ALCOHOL

Himwich and his co-workers [3] state that the ingestion of alcohol is followed by an acidosis resulting from a relative retention of carbon dioxide and an accumulation of lactic acid, causing a diminution of the alkali reserve. They attribute the after-effects, or "hangover," to increased arterial lactic acid. Observing a slight rise in blood sugar levels as alcoholism progressed, they postulate that the blood sugar rises because alcohol spares dextrose, possibly diminishes hepatic oxidation, and the acidosis favors transformation of glycogen to dextrose. They state further that alcohol transforms muscle glycogen to lactic acid.

Sollmann [1] states that less than 2 per cent, and never more than 10 per cent, of alcohol is excreted by the lungs and kidneys. The remainder is completely oxidized in the tissues to carbon dioxide and water (quoting Atwater and Benedict [4]), probably with acetic acid as an intermediate stage.

Mellanby [5] asserts that alcohol in the body is oxidized at a constant unchangeable rate of approximately 0.185 cc., or 0.148 Gm. of alcohol per kilogram per hour, regardless of the amount of alcohol present in the body.

Haggard and Greenberg,[6b] taking strong exception to Mellanby's view, state that "the rate of oxidation is proportional to the amount of alcohol present," the decrease ranging between 15.9 and 21.1 per cent of the alcohol present.

Concerning urinary excretion of alcohol, in their thorough investigation, Haggard and Greenberg [6a] find that, although "the concentration of alcohol in the urine bears no relation to the volume of urine secreted, the amount of alcohol eliminated through the kidneys, however, varies directly with the volume secreted," and "the percentage of the total amount of alcohol ingested that is lost through the kidneys depends, therefore, upon the amount of urine passed." They state that "during sixteen hours following ingestion of alcohol from 2.1 per cent to 4.3 per cent of the total amount is eliminated through the kidneys, the variation depending upon the rate of secretion of urine."

Miles [7] found that from 1.2 to 1.6 per cent of the alcohol appeared in the urine during the first two hours subsequent to ingestion.

From the Fifth Medical Service, Boston City Hospital, John A. Foley, M.D., Physician-in-Chief, and the Department of Medicine, Boston University School of Medicine.

For the blood chemistry determinations of carbon dioxide, sugar and lactic acid we are indebted to Miss Eunice Smith of the Clinical Laboratory, Boston City Hospital.

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2. Weiss, Soma, and Mallory, G. K.: Lesions of the Cardiac Orifice of the Stomach Produced by Vomiting, J. A. M. A. **98**: 1353-1355 (April 16) 1932. Mallory, G. K., and Weiss, Soma: Hemorrhages from Lacerations of the Cardiac Orifice of the Stomach Due to Vomiting, Am. J. M. Sc. **178**: 506-515 (Oct.) 1929.

3. Himwich, H. E.; Nahun, L. H.; Rakieten, Nathan; Fazikas, J. F.; Du Bois, Delafield, and Gildea, E. F.: The Metabolism of Alcohol, J. A. M. A. **100**: 651-654 (March 4) 1933.

4. Atwater and Benedict: Mem. Natl. Acad. Sc. **8**: 231, 1902.

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6. Haggard, H. W., and Greenberg, L. A.: Studies in the Absorption, Distribution and Elimination of Ethyl Alcohol, J. Pharmacol. & Exper. Therap. **52**: 137-179 (Oct.) 1934; (*a*) II. The Excretion of Alcohol in Urine and Expired Air and the Distribution of Alcohol Between Air and Water, Blood and Urine, ibid., pp. 150-167; (*b*) III. Rate of Oxidation of Alcohol in the Body, ibid., pp. 167-179.

7. Miles, W. R.: The Comparative Concentrations of Alcohol in Human Blood and Urine at Intervals After Ingestion, J. Pharmacol. & Exper. Therap. **20**: 265-317 (Nov.) 1922.

Concerning the elimination of alcohol in the expired air, Haggard and Greenberg [6a] state that "the total amount of alcohol eliminated (in the expired air) in the eight hours following administration was . . . 3.94 per cent of the amount ingested."

Haggard [8] has shown, using ether, that the rate of elimination of volatile substances through respiration is nearly proportional to the volume of breathing.

Henderson, Haggard and Coburn [9] and White [10] have shown that the inhalation of from 7 to 10 per cent of carbon dioxide will cause rapid deetherization after ether narcosis.

Haggard and Greenberg [6a] assert that, by increasing the volume of breathing with inhalation of carbon dioxide, 10 per cent or more of the amount of alcohol ingested can be eliminated in the first hour or two.

Hunter and Mudd [11] administered carbon dioxide to three patients in alcoholic coma, each of whom recovered consciousness within half an hour after carbon dioxide was inhaled for thirty minutes or more. They did not determine the blood alcohol concentration. A fourth patient was not unconscious but had some improvement in his thick speech after thirty minutes of carbon dioxide. They also secured a volunteer to drink 28 cc. of 95 per cent alcohol on each of two separate days, and blood alcohol determinations were made. On the second day of the test, carbon dioxide was administered for fifty minutes. The blood alcohol curve fell more rapidly than on the first day of the test, when no carbon dioxide had been given.

With carbon dioxide treatment the peak of the alcohol level was reached at about the same time as the curve for the untreated condition. However, it not only started falling a half hour earlier but fell 21.1 mg. in the first forty-two minutes of beginning decline, as compared to a fall of 5.7 mg. in the control, in the first thirty-four minutes of beginning decline. They did not state whether arterial or venous blood was used.

Van Wulften Palthe [12] found that oxygen inhaled by man and animals largely relieved the symptoms of alcoholic intoxication and that oxygen inhalation prevented death in rabbits which had been given alcohol in doses lethal to control animals.

Barach [13] asserted that although lethal doses of alcohol caused the same number of deaths among rabbits kept in air as among those kept in an oxygen tent, intoxicated men at rest showed improved sensory function during oxygen inhalation. On withdrawal of the oxygen, the men lapsed into their former state of intoxication. If, however, from 7 to 10 per cent of carbon dioxide in oxygen was given, the improvement was permanent. He concluded that alcohol intoxication is not due to the kind of oxygen want that is susceptible of relief by oxygen inhalation.

PURPOSE OF STUDY

Since carbon dioxide increased the respiratory excretion of alcohol, and since the oxidation of alcohol might be increased through the administration of oxygen, it is conceivable that the inhalation of a combination of 10 per cent carbon dioxide and 90 per cent oxygen mixture might accelerate recovery from acute alcoholic coma, especially of the paralytic state with respiratory depression and cyanosis. If it did no more than keep such a patient from dying of respiratory depression, it would, by keeping him alive, enable him to oxidize the alcohol himself.

It also seemed advisable to determine whether this therapy alone increased the rate of fall in the blood alcohol level. This was accomplished by following the venous blood alcohol curve. Changes in venous blood sugar, carbon dioxide capacity and lactic acid were also followed.

METHODS

The persons selected were alcoholic patients who not only had an odor of alcohol on their breath and a history of drinking alcohol but were comatose, stuporous, drowsy or ataxic.

At the start of the experiment, 30 cc. of oxalated blood was obtained from the cubital vein of the arm. The skin was sterilized with 2 per cent aqueous mercurochrome (rather than tincture of iodine, because of its alcoholic content).

An open slot mask connected with a tank containing a mixture of 10 per cent carbon dioxide and 90 per cent oxygen was then placed over the patient's face. The patient was allowed to breathe this mixture for thirty minutes, the expired air passing from the mask out through the open slot. At the end of thirty minutes the inhalation was suspended and 30 cc. of blood again withdrawn as before.

In the control cases no carbon dioxide-oxygen therapy was given, here also blood being withdrawn on admission and at the end of thirty minutes.

On each sample of blood carbon dioxide capacity, alcohol, sugar and lactic acid determinations were made. Sodium fluoride was used as a preservative in the portion intended for blood lactic acid and sugar determinations. The blood plasma intended for the carbon dioxide capacity determination was prepared and protected according to the methods suggested by Peters and Van Slyke.[14] In the determination of blood alcohol the method used was that described by Turner [15] based on the Naville modification of the Nicloux method. For an account of the method in full, Turner's article is recommended.

RESULTS

Clinically the patients receiving carbon dioxide-oxygen inhalation improved more rapidly than those who did not. However, as our purpose was to obtain chemical substantiation of the clinical observations we will first discuss the laboratory results and then interpolate the clinical results.

Normally, according to Schweisheimer,[16] human blood contains about 0.03 per cent of alcohol, or about 30 mg. per hundred cubic centimeters of blood.

Naville [17] asserted that slight intoxication in human beings starts when the blood alcohol content ranges from 0.1 to 0.2 per cent (from 100 to 200 mg. per hundred cubic centimeters of blood), is marked at 0.25 per cent (250 mg. per hundred cubic centimeters of blood), is grave at 0.3 per cent (300 mg. per hundred

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14. Peters, J. P., and Van Slyke, D. D.: Quantitative Clinical Chemistry, Baltimore, Williams & Wilkins Company, 1931, volumes I and II.
15. Turner, R. G.: Blood Alcohol and Its Relation to Intoxication, J. Pharmacol. & Exper. Therap. **44**: 305-324 (March) 1932.
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17. Naville, F.: Difficulties et erreurs dans le diagnostic de la cause des morts dites "naturelles," Revue méd. de la Suisse Rom. **48**: 742-749 (Sept. 10) 1928.

cubic centimeters of blood) and is profound (coma or death) at 0.35 to 0.4 per cent (from 350 to 400 mg. per hundred cubic centimeters of blood).

It will be noted that in the control group (table 1) at the end of half an hour the blood alcohol level fell little if at all, the greatest fall being 26 mg. (1, table 1).

On the other hand, in the group treated with carbon dioxide-oxygen inhalation for half an hour (table 2) in all but two cases the alcohol level, at the end of half an hour, fell more than the greatest fall in the control group. In the two exceptions a rise of 26 mg. occurred in one (7, table 2) and in the other a fall of but 8 mg. (6, table 2). These apparent exceptions will be discussed later.

The remaining seven cases, then, show a decrease greater than in the control group. In five of these cases (1, 2, 3, 5, 8, table 2), a decrease of 99 mg. or more is noted—a fall occurring during a half hour of carbon dioxide-oxygen therapy, which is sufficient in itself to reduce the blood alcohol from that level causing dangerous coma with respiratory depression and cyanosis to a level which produces the ordinary arousable type of alcoholic intoxication.

In the two other treated cases in which there is a decrease in the blood alcohol level but in which that decrease is less than 99 mg., we still note that one decrease (4, table 2) equaled 53 mg., or twice the decrease in the untreated case showing the greatest spontaneous fall (26 mg., 1, table 1). The other case (9, table 2) shows a decrease of 35 mg., which is still greater than the greatest spontaneous decrease in the control group. However, we will classify the latter case with the other two unsatisfactory or nonspectacular response cases, making three treated cases (6, 7, 9, table 2) which do not show a significantly greater decrease than the greatest spontaneous decrease.

That these do not invalidate the proof of the efficacy of carbon dioxide-oxygen inhalation in causing an accelerated significant decrease in total body alcohol level, and that their apparent paradoxical effect is easily accounted for, can be readily understood by a consideration of the following evidence:

Although the concentration of alcohol in the peripheral venous blood, contrary to Miles,[7] does not reach as high a level as in the peripheral arterial blood, the peripheral arterial and venous blood alcohol concentrations are in close agreement during the period of decline in alcohol concentrations, which decline begins to occur at the end of an hour and a half following alcohol ingestion.[6a]

From the figures presented by Haggard and Greenberg it seems that although the peripheral venous blood alcohol level never actually represents the height of the arterial blood alcohol level (at its peak the arterial blood alcohol level is 53 per cent higher than the venous) a rise or fall in the venous level reflects a similar though greater rise or fall in the arterial level. They also show that the peak of blood alcohol absorption is reached only after one and one-half hours following ingestion.[6a] Even with intravenous injection of alcohol, in dogs, it required from twenty to twenty-five minutes for equilibration of alcohol concentration between arterial and venous blood and body tissues.[6a]

We had no way of knowing how long before admission any of our patients had ingested alcohol, because of their intoxicated state. If their last alcoholic drink had been within less than an hour and a half before admission, from Haggard and Greenberg's experiments, it is seen that the blood alcohol level must have been rising. Even though carbon dioxide-oxygen inhalation might have been lessening the total amount of alcohol by increasing pulmonary expiration of alcohol, still some rise in blood alcohol concentration would have occurred, since equilibrium and the peak level would not yet have been reached. The rise might not be great or might even be prevented by a rate of excretion equaling absorption, but a spectacular fall would not be recorded. This, we believe, explains the apparent failure to secure an appreciably accelerated decrease in blood alcohol in cases 6, 7 and 9, table 2, which seem not to bear out the results in the remaining cases.

TABLE 1.—*Control Patients*

	Venous Blood											
	Alcohol, Mg. per 100 Cc.			Sugar, Mg. per 100 Cc.			Carbon Dioxide Capacity, Volume per Cent			Lactic Acid, Mg. per 100 Cc.		
Alcoholic Condition	0	½ Hour	Change	0	½ Hour	Change	0	½ Hour	Change	0	½ Hour	Change
1. Stupor	510	484	—26	122	103	—19	36	38	+ 2	25.7	21.7	— 4.0
2. Coma	492	488	— 4	104	114	+10	39.5	38	— 1.5	29.5	21.5	— 8.0
3. Odor of alcohol; ataxia	492	492	0	84	82	— 2	45	45.4	+ 0.4	31.5	32.2	+ 0.7
4. Coma	432	419	—13	95	95	0	37	30	— 7.0	28.2	35.5	+ 7.3
5. Odor of alcohol; ataxia	413	391	—22	85	93	+ 8	30.5	31	+ 0.5	62.4	40.6	—21.8
6. Drowsy	352	347	— 5								*	
7. Coma	431	419	—12	121	117	— 4	39.5	36.5	— 3.0	28.9	24.5	— 4.4

* Rest of blood spilled.

TABLE 2.—*Results of Inhalation of Ten per Cent Carbon Dioxide and Ninety per Cent Oxygen for Thirty Minutes*

	Alcohol, Mg. per 100 Cc.			Sugar, Mg. per 100 Cc.			Carbon Dioxide Capacity, Volume per Cent			Lactic Acid, Mg. per 100 Cc.		
Alcoholic Condition	0	½ Hour	Change	0	½ Hour	Change	0	½ Hour	Change	0	½ Hour	Change
1. Odor of alcohol; ataxia	431	294	—137	94	100	+ 6	38	45	+ 7.0	62.4	51.2	—11.2
2. Stupor	544	444	—100	115	87	—28	31.5	37	+ 5.5	28.7	29.9	+ 1.2
3. Stupor	654	523	—131	100	80	—20	40	44.5	+ 4.5	26.2	23.3	— 2.9
4. Coma	510	457	— 53	88	77	—11	42.4	45	+ 2.6	36.6	30.7	— 5.9
5. Odor of alcohol; ataxia	462	363	— 99								*	
6. Odor of alcohol; ataxia	338	330	— 8	97	116	+19	45	44.4	— 0.6	39.4	32.7	— 6.7
7. Coma	387	413	+ 26	135	123	—12	45	45.5	+ 0.5	29.9	26.2	— 3.7
8. Coma; cyanosis; slow, shallow respiration	404	281	—123	78	84	+ 6	39.5	42	+ 2.5	38.6	37.6	— 1.0
9. Coma; cyanosis; clammy	448	413	— 35	84	87	+ 3	38.9	37.5	— 1.4	67	64.5	— 2.5

* Rest of blood spilled.

We had considered doing gastric lavage before administering therapy to rule out alimentary post-absorption. It was felt, however, that, by the time these patients were apprehended by the police and brought to the hospital, absorption would be complete. Furthermore, it is now refuted that the alimentary absorption of alcohol is complete at the time the concentration of the alcohol in the blood reaches its maximum.[6b]

To summarize, it would seem from the foregoing evidence that carbon dioxide-oxygen inhalation definitely accelerates the decrease in venous blood alcohol, that an accelerated decrease in venous blood alcohol with carbon dioxide-oxygen therapy represents an accelerated decrease in total body alcohol, and that, if therapy is instituted before the blood alcohol level reaches its peak, the venous blood alcohol analyses fail to reveal the actual accelerated decrease of blood alcohol that occurs. (One need not be concerned, in actual therapy, as to whether or not this peak has been reached, for obviously administering carbon dioxide-oxygen increases the pulmonary excretion of alcohol and so decreases total body alcohol.)

Carbon dioxide-oxygen inhalations were administered for thirty minutes arbitrarily in order to have a definite control time. In actual clinical work the alcoholic patient in coma can be given carbon dioxide-oxygen inhalations as long as is necessary to reduce the patient from a state of dangerous coma, with cyanosis and respiratory depression, to a state of alcoholic intoxication without respiratory embarrassment.

We wish to emphasize that this is an emergency treatment and is not indicated in the moderate degrees of intoxication so frequently encountered.

CLINICAL RESULTS

In every case of unarousable alcoholic coma, with slow, jerky, shallow respirations and cyanosis, carbon dioxide-oxygen inhalation caused the respirations to become deep and regular almost at once. The patient rapidly turned from a cyanotic cold patient to a pinkish warm one. At the end of a half hour of therapy he had recovered sufficiently so that he could breathe normally when left to himself. He could be aroused by painful stimuli. (Every case treated showed the latter response invariably on the second venipuncture, whereas no response to the first venipuncture was often noted.)

In those patients not in coma but who were stuporous, the reaction to painful stimuli was enhanced and the speech improved following therapy. These patients clinically do not require carbon dioxide-oxygen inhalations at all but in this investigation were used to obtain additional blood alcohol studies.

Patients in alcoholic stupor should be watched for signs of coma, and if coma develops carbon dioxide-oxygen therapy is then indicated, although obviously no harm and much good can be done these patients by carbon dioxide-oxygen inhalations even though they are merely stuporous.

It was not our intention to bring these patients to an immediate state of sobriety but to bring them from coma along the road of recovery to a point at which ordinary moderate intoxication would prevail without respiratory depression. From the latter stage of intoxication in practically all instances patients recover.

To repeat: This is an emergency, not a routine, therapy for acute alcoholism and is indicated only in the comatose alcoholic patient.

OTHER LABORATORY RESULTS

A blood sugar elevation occurs in anesthesia by chloroform, nitrous oxide and ethylene[18] and in morphine narcosis in dogs.[19] Himwich and his co-workers[3] report that blood sugar rises in alcoholism also. We cannot confirm their results.

No significant changes in blood sugar levels were found before or after carbon dioxide-oxygen therapy.

Morphine narcosis and also alcoholism were found to cause a rise in blood carbon dioxide content.[20] In our series the blood carbon dioxide capacities were low normal or below normal (accepting as normal from 43.3 to 55.9 volumes per cent[14]). This is in agreement with the results of Himwich and his co-workers[3] to the effect that a carbon dioxide retention occurs in alcoholism.

Carbon dioxide-oxygen therapy had little appreciable effect on the venous carbon dioxide capacity and did not tend to produce a carbon dioxide retention.

The blood lactic acid levels tended to be above normal in all groups (normal blood lactic acid from 10 to 20 mg. and possibly 30 mg. per hundred cubic centimeters of blood[14]). They were not proportional to the concentration of blood alcohol, blood sugar or blood carbon dioxide capacity.

That high lactic acid content causes an acidosis in alcoholism and in anesthesia by ether, chloroform, nitrous oxide and ethylene has been shown.[21]

Long[22] asserted that adding carbon dioxide to the inhalation of oxygen caused blood lactic acid to disappear in normal resting human beings.

In this study, carbon dioxide-oxygen inhalation produced no appreciable lowering of the blood lactic acid content, which is in accord with the observations of Ronzoni, Koechig and Eaton,[21] who reported that the high blood lactic acid concentration in ether anesthesia is not influenced appreciably by the blood carbon dioxide or oxygen tension. It is also in accord with the observations of Anrep and Cannan,[23] who found that the lactic acid concentration in alkalemia and acidemia is not influenced appreciably by the blood carbon dioxide or oxygen tension.

CONCLUSIONS

Acute alcoholic coma with dangerous respiratory depression, paralysis and cyanosis is a medical emergency. Death may be definitely prevented and recovery accelerated by inhalation of a mixture of 10 per cent carbon dioxide and 90 per cent oxygen for a length of time sufficient to reestablish and maintain normal respiration and color even after the inhalation is suspended.

A minimum time of half an hour should be observed. If necessary, the inhalation may be carried out longer.

An accelerated decrease in venous blood alcohol levels is produced by carbon dioxide-oxygen inhalation over a period of thirty or more minutes, indicating an accelerated decrease in total body alcohol.

No significant blood sugar observations were recorded either before or after carbon dioxide-oxygen therapy.

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22. Long, C. N. H.: The Lactic Acid in the Blood of a Resting Man, J. Physiol. **58**: 455-460 (May 23) 1924.

23. Anrep, G. V., and Cannan, R. K.: The Concentration of Lactic Acid in the Blood in Experimental Alkalemia and Acidemia, J. Physiol. **58**: 244-258 (Dec. 28) 1923.

In alcoholic intoxication there was a tendency to lowered blood carbon dioxide capacity. No appreciable change and no carbon dioxide retention was produced by carbon dioxide-oxygen therapy.

The blood lactic acid content was elevated in alcoholism but was unaffected by carbon dioxide-oxygen therapy.

The purpose of the carbon dioxide-oxygen therapy is not to arouse completely a comatose alcoholic patient but to reduce him from a state of dangerous paralytic alcoholism to the less deep stage of anesthesia from which he can safely be expected to recover.

The therapy is recommended as an emergency treatment and is not indicated in the general run of moderately intoxicated patients so frequently encountered.

ROSACEA INTERPRETED AS A BACTERID FROM FOCAL INFECTION

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The definition of rosacea is not as easy as one would suppose. The essential characteristics are, first, the location in the midportion of the face, the so-called flush area; second, the chronicity of the disease, and, third, erythemas of different types. In addition to these one may find thickening of the skin, telangiectases, papules, pustules, crusts, scars, seborrhea, and, in cases complicated with acne, comedones. For the patient rosacea is a serious problem chiefly on account of the psychic disturbance caused by the disfigurement. Any physician who has treated many cases knows how unsatisfactory are the therapeutic results and how frequently one sees recurrences in apparently cured cases. The reason for this is probably that most treatment is directed at symptoms rather than at the cause of the disease.

A clinical experience gave impetus to our present study. A woman with a pustular eruption of the face, of several years' duration, consulted one of us. The eruption resembled an iodide acne, but there was no history of iodide ingestion, although it was suspected that iodoform gauze might have been used in the treatment of a recently abscessed tooth. The patient asserted that her teeth were examined every three months by a competent dentist. She made no improvement under local treatment but returned a few months later completely cured after a visit to the Mayo Clinic at Rochester, Minn., and attributed her cure to the draining of a maxillary empyema caused by an infected tooth.

The recovery of this patient was so dramatic that we decided to study the question of focal infection in rosacea further and have since investigated fifty cases. Patients with rosacea applying for treatment at the Vanderbilt Clinic have been studied in cooperation with the School of Dental and Oral Surgery and the Nose and Throat Department for possible focal infections. Examination of the gastro-intestinal and genito-urinary tracts was made in all cases in which the history indicated the possibility of focal infection in these organs. Most patients were tested with toxins or vaccines of bacteria commonly found in infected teeth and sinuses.

The majority of these patients had previously received the usual forms of treatment for rosacea without appreciable improvement, and our efforts were concerned chiefly with the detection and removal of focal infections. The results in this regard are summarized in table 1. The group studied had had rosacea for an average of four years. The proportion of females to males was four to one. The greatest number of cases belonged to the age group of 30 to 40 years. It surprised us that the next largest number belonged to the group between 20 and 30.

FOCAL INFECTIONS

The infections most frequently found were dental (twenty-nine cases). Dr. Daniel E. Ziskin,[1] who made many of the dental examinations, considered as possible foci of infection not only frank periapical abscesses but also advanced periodontoclasia (pyorrhea), pulpless teeth with or without roentgen evidence of periapical infection, and caries with pulp involvement. Five cases of simple caries were included because the recent investigations of Boedecker[2] on the permeability of the teeth to dyes indicated that toxic material may be absorbed from such lesions. Clinical inspection of the teeth and roentgen examination were supplemented by vitality tests with the galvanic current.

The next largest number of focal infections was found in the paranasal sinuses, of which the maxillary was most frequently involved. The third most frequent type of infection was chronic tonsillitis. In addition, otitis media, cervical adenitis, chronic appendicitis and deep-seated cutaneous infections were considered as possible foci. Eighteen patients suffered from chronic constipation, and Billings[3] believed that in such cases the intestine might act as a focus.

Since these cases were tabulated one of us has observed a patient with endometritis whose rosacea has cleared up following curettage.

OTHER ETIOLOGIC FACTORS

Other evidence of pyogenic infection was obtained from the histories. In one case the rosacea began after a puerperal sepsis. Two patients stated that their eruptions began soon after severe attacks of influenza. Seven patients gave a history of tonsillectomy and six of appendectomy in recent years. Two patients had arthritis.

In seven cases, the onset was preceded by some disease of the genital tract necessitating operative intervention such as hysterectomy, ovariectomy, salpingectomy or the removal of fibroid tumors. The last histories could be considered to support the theory of causation either by focal infection or by endocrine disturbance. It was interesting that four of our fifty patients had had thyroidectomies. Twelve patients reported the habitual intake of drugs of which phenolphthalein was the most frequent. Phenobarbital, acetylsalicylic acid and bromides were also reported.

Demodex folliculorum was found in a large number of our cases although not in all. The technic used was that advised by Ayres and Anderson.[4] The fact that

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1. Ziskin, D. E.: Personal communication to the authors.
2. Boedecker, C. F.: Metabolic Disturbances in Relation to Teeth, Bull. New York Acad. Med. **10**: 553 (Sept.) 1934.
3. Billings, Frank: Focal Infection, New York, D. Appleton Company, 1916.
4. Ayres, Samuel, Jr., and Anderson, N. P.: Demodex Folliculorum: Its Rôle in the Etiology of Acne Rosacea, Arch. Dermat. & Syph. **25**: 89 (Jan.) 1932.

this parasite is found in many other dermatoses made us doubtful as to its pathogenic significance. It must be admitted that in some of our elderly patients whose foci of infections could not be removed the rosacea improved greatly under the use of an ointment.[5] We did not, however, feel certain that this improvement was due to antiparasitic action.

SENSITIZATION TESTS

In twenty-seven cases intradermal skin tests were made with staphylococcus toxin prepared by the method of Parker[6] and streptococcus toxin prepared by the method of Wadsworth[7] (table 2). These toxins were used in dilutions (1:10 to 1:50 for the staphylococcus toxin and 1:400 for the streptococcus toxin) which had been found to give few positive reactions in the Allergy Clinic. Of this group, seventeen gave an immediate and thirteen a delayed reaction to the staphylococcus toxin; five an immediate and seven a delayed reaction to streptococcus toxin. Thirteen cases were also tested with a colon bacillus vaccine prepared for us by Dr. R. Lyons[8] from a hemolytic strain of colon bacillus. It consisted of 1:1,000 suspension of sedimented bacteria killed by heating to 60 C. for one-half hour. Previous tests with this vaccine on a number of patients by one of us (E. A. L.) had shown very few positive reactions. Of thirteen cases two showed immediate and nine delayed reactions. A number of patients also reported a flare up of their eruption (focal reaction) after the intradermal tests.

TABLE 1.—*Focal Infections*

	Cases	Per Cent
Number of cases	50	
Male	9	
Female	41	
Average duration	4 years	
Dental infections	29	
Accessory sinuses	13	
Tonsils	12	
Nose	3	
Otitis	2	
Cervical adenitis	2	
Chronic appendicitis	1	
Infected hemorrhoids	1	
Abscess of knee	1	
Carbuncle	1	
Definite focal infections were found in	43	86
Focal infections not found in	7	14
Several patients had multiple foci		
Results after removal of focal infections		
Cleared up	14	28
Greatly improved	13	26
Improved	12	24
Unimproved	1	2
Unknown (patients could not be followed up)	10	

Stool examination of several patients showing a positive reaction to Bacillus coli showed the presence of hemolytic strains in the intestine.

RESULTS FROM THE REMOVAL OF FOCAL INFECTIONS

We have considered as cured cases in which the skin returned to normal except for the presence of telangiectases and scars and which remained clear during our period of observation, which varied from one to three years; as greatly improved cases which showed no papules or pustules but some erythema, and as improved cases in which papules and pustules of diminished number and severity continued to develop. It is probable that the results would have been better were it not for the refusal of some patients to undergo the various operations indicated, such as dental extraction and tonsillectomy. In some elderly patients the advisability of such an operation seemed questionable. It should also be borne in mind that, as Billings has emphasized, foci of infection are often multiple, that a patient may develop one primary and then a number of secondary foci, and that only the successful removal of all foci can insure the patient against reaction from the bacteria concerned. It should be stated that it was necessary to give some patients mild local treatments or ultraviolet radiation in order to keep them under observation. The majority had, however, had similar treatments before without appreciable improvement, and we do not think that the use of these accessory measures invalidates our conclusions as to the effectiveness of the removal of the foci of infection.

TABLE 2.—*Sensitization Tests*

	Number of Cases	Immediate Reaction	Delayed Reaction
Staphylococcus toxin	27	17	13
Streptococcus toxin	27	5	7
Colon bacillus vaccine	13	2	9

Age of Patients					
10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70
1	9	22	8	6	4

COMMENT

The etiology of rosacea is probably complex. One observes three types of erythema—in early cases a bright redness of the cheeks and nose which makes the skin hot and is undoubtedly due to active congestion with increased velocity of circulation. This hot redness comes on in attacks of varied duration. Later one sees a dusky bluish redness with a cold skin. This is probably due to passive congestion and a diminished velocity of the blood flow. This cold redness is more chronic and often accompanied by thickening of the skin and visible dilatation of superficial venules. It is the condition called by the French, "couperose," and seems to be the essential symptom of rosacea. The disease may stop here. Later one may see a third type of erythema consisting of transitory red blotches, which are hot, indicating active congestion and which frequently occur alone or associated with papules and pustules. The capillary bed of the cheeks reacts more violently than that of other areas of skin to various physiologic stimuli. These areas also seem especially susceptible to injuries which lead to paralysis or weakening of the walls of the small vessels.

It cannot be accidental that this disease as well as lupus erythematosus, lupus vulgaris, syphilis, leprosy and certain drug eruptions so frequently localizes in the so-called flush areas of the face; that is, the central portions of the cheeks and the lower portion of the nose. The coldness of the skin in chronic rosaceas indicates that the capillary circulation is sluggish. The visible superficial venules undoubtedly represent places of slowed circulation, and Thibierge[9] and others have described dilation and even sacculation of the venules of the deep corium. It seems possible that this slowed circulation offers a mechanical explanation of the susceptibility of such areas to injury by bacteria or toxins

5. A sulfur ointment with an alkaline reaction containing sulfur, potassium hydroxide, petrolatum, hydrous wool fat, zinc sulfate and water.
6. Parker, J. T.: J. Exper. Med. **40**: 761 (Dec.) 1924.
7. Wadsworth, A. B.: Standard Method of the Division of Laboratories and Research of the New York State Department of Health, 1927.
8. Lyons, R.: Personal communication to the authors.
9. Thibierge, G.: La pratique dermatologique, vol. 1, Acne rosée, p. 228.

gaining access to the blood stream. This situation seems similar to the condition observed in other acra which leads erythema induratum to localize on the lower legs and chilblain lupus to localize on the nose and fingers.

The hypotheses suggested as the cause of rosacea are too numerous for us to attempt to discuss here. Emphasis has been laid by most writers on gastro-intestinal disturbances, endocrine disturbances and so forth. Wile,[10] Stokes,[11] Andrews [12] and others mention focal infection as a causative factor, but the importance of such infections has not been stressed. Linser[13] considers rosacea an allergic reaction of elderly persons toward the commonly found pyogenic bacteria; he found a more pronounced reaction in the areas of rosacea than on the normal skin areas of the arm to staphylococcus vaccines (freshly prepared, concentrated, centrifuged and killed cultures) and believed that he was able to desensitize his cases. We believe that the fact that so many of our cases cleared up or improved after the removal of the foci of infection indicates that rosacea, or at least the pustular lesions of rosacea, could be interpreted as bacterids. We use this word as analogous to other "ids" to denote lesions due to access of bacteria or to their toxins to sensitized areas of skin which are caused not by the invasive growth of the bacteria but by an allergic reaction to them.

The detection of such bacteria in the blood stream would be difficult, because they probably invade infrequently and in small numbers. Micro-organisms do not long survive in the "ids" that they produce. We cannot prove that the bacteria fail to proliferate in the pustular lesions of rosacea, because such lesions are apt to be secondarily infected with staphylococci or streptococci from the skin surface. The evidence of cutaneous allergy to these bacteria obtained by our skin tests supports this point of view. We were particularly interested in the reactions to the colon bacillus, which suggest that the intestine may act as a focus of infection in some cases. The lesions would seem analogous to the rosacea-like tuberculid of Levandowsky, which is presumably caused by invasion of sensitized areas by the tubercle bacillus. It also seems analogous to the pustular bacterids of the hands and feet described by Andrews.[14]

The third type of erythema, the blotchy, active hyperemia, would seem to be caused by bacterial sensitization. Whether the other erythemas are due to focal infection seems more doubtful. There is much to suggest that endocrine or other factors affecting the neurovascular mechanism in this area may play a rôle. It was striking, however, that in a number of our patients not only the pustulation but the diffuse chronic erythema disappeared after the removal of the foci of infection. The deep acne of the chin, according to Brocq,[15] who devotes a whole chapter to this form of acne, is mostly found in women at the age of 25 to 45 and belongs, in our opinion, to rosacea. These women have endometritis, disturbances of the ovaries, tubes, menstrual disorders, and congestive flushes from the uterus and are very recalcitrant to treatment. The skin is bluish and cold, and very few if any comedones are present. The patients are not in the acne age nor have they acne lesions in the usual locations. Several such cases were observed only recently by one of us which cleared up after removal of the foci of infection.

10. Wile, Udo: Cutaneous Manifestations of Systemic Diseases, Bull. New York Acad. Med. **8:** 289 (May) 1932.
11. Stokes, J. H., and Beerman, Herman: Effect on the Skin of Emotional and Nervous States: IV. The Rosacea Complex: A Reappraisal with Special Reference to the Constitutional Background and the Rationale of Treatment, Arch. Dermat. & Syph. **26:** 478 (Sept.) 1932.
12. Andrews, G. C.: Dermatology, Philadelphia, W. B. Saunders Company.
13. Linser, P.: Rosacea, Etiology and Treatment, Med. Klin. **30:** 357-358 (March 16) 1934.
14. Andrews, G. C.; Birkman, W. F., and Kelly, R. J.: Recalcitrant Pustular Eruptions of the Palms and Soles, Arch. Dermat. & Syph. **29:** 548 (April) 1934.
15. Brocq, L.: Cliniques dermatologiques, Paris, Masson & Cie, 1927.

SUMMARY

1. Fifty cases of rosacea were studied from the standpoint of focal infections.
2. In 86 per cent various focal infections were found.
3. Removal of these foci resulted in fourteen cures, thirteen greatly improved, twelve improved, and one unimproved; ten were not observed for a sufficient length of time. It goes without saying that for many reasons not all foci could be removed.
4. The close relationship between foci of infection and bacterids is apparent.

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ABSTRACT OF DISCUSSION

DR. SAMUEL AYRES JR., Los Angeles: For the past five or six years I have been studying the problem of rosacea and I have been conscious of the importance of focal infection in the etiology of certain skin disorders. I have not, however, associated these two ideas. Most of the older textbooks stress the importance of gastro-intestinal disturbances, hypochlorhydria, alcohol indulgence, and so on. More recently three other etiologic factors have been emphasized. Dr. Anderson and I called attention to the probable causal relationship of Demodex folliculorum. Stokes and Beerman considered psychic factors of great importance and pointed out that they frequently led to secondary functional disturbances, which in turn produced rosacea. And now our attention is called to the possibility that the lesions of rosacea may represent bacterids. All three theories are probably correct as applied to certain types of cases. A fourth type of erythema in our experience has been the commonest and is the type usually associated with Demodex infestation. This type of erythema is usually the earliest manifestation and persists relatively unchanged throughout the course of the disease except for occasional exacerbations or sometimes a gradual increase in intensity. It may be diffuse or somewhat blotchy and is most pronounced on the central portion of the face, including the medial aspects of the cheeks, lower half of the nose and middle of the forehead. One or more of these areas may be involved. The skin is usually dry and nearly always characterized by minute dry follicular plugs or scales. This appearance is so characteristic that we have given it the name pityriasis folliculorum (Demodex) when the pustular element is lacking. In addition to the redness and insignificant scaling there usually are a few scattered extremely tiny superficial vesicopustules. Some cases show severe papulopustular elements. One patient, whose condition had resisted all manner of treatment, was completely cured by an antiparasitic ointment. However, the most characteristic features of this fourth type of erythema are the dryness, the follicular scaling and the minute vesicopustules. In many cases the entire picture is inconspicuous. The patient is usually a woman who complains that her face is so dry that she can't use soap. In our experience Demodex can be found readily in large numbers in the majority of cases of rosacea by simply picking off a few follicular scales or taking a droplet of pus from several of the superficial vesicopustules and examining them under the low power of the microscope after adding a drop of 40 per cent solution of potassium hydroxide. In contrast, we have found Demodex only rarely in superficial or deep pustules in many cases of acne vulgaris or sycosis vulgaris, which we consider an adequate control. Furthermore, under the local application of a strong antiparasitic ointment, such as the one mentioned by the authors,[5]

there is rapid clinical improvement, often as much as from 80 to 90 per cent within one or two weeks, accompanied by a progressive decrease in the number of Demodex organisms that can be found.

DR. MYER SOLIS-COHEN, Philadelphia: In acne rosacea and acne vulgaris I take cultures of the nares, nasopharynx and tonsils or tonsillar fossae, and sometimes the urine and feces, in addition to the pustule. Many physicians fail to realize that the removal of infected tissue does not necessarily remove the focus of infection, because infecting bacteria may remain behind on adjacent tissues. Instead of the bacterial origin having failed, as the authors say, may it not be that every possible focus has not been examined and that a focus has been regarded as removed when the infecting bacteria have been still present? As bearing on the question as to whether the cause is a germ or a bacterid, I find the same organism in the pustule and in the nares, throat or infected tooth. I regard the skin lesions as secondary and believe that the primary focus is commonly in the upper respiratory tract and the mouth. Gastro-intestinal and urinary infections I look on also as secondary. In many instances I feel that a tooth infection is secondary, a devitalized tooth being a place of lessened resistance, which becomes infected secondarily by organisms from the nose and throat. Experiments I made several years ago showed a lack of correspondence between bacteria that were infecting the patient and those producing a reaction when injected intracutaneously. An acne or other secondary lesion is seldom cured merely by the removal of infected tissue or the drainage of an infected cavity at the primary focus. As a rule it is necessary in addition to raise the patient's resistance to the infecting organism by means of a potent vaccine that contains this infecting germ and its soluble exotoxin. In chronic and focal infections, however, the organism that appears or predominates in a culture is not always of etiologic significance. I employ the pathogen-selective culture in which the inoculum is planted simultaneously in a rich culture medium and in the patient's whole, coagulable blood. Organisms killed by the patient's blood are regarded as having no causal relationship to the infection, while those that survive in it are believed to be important etiologically. Remarkable and rapid cures of long standing cases have followed this method of treatment.

DR. E. S. LAIN, Oklahoma City: Treatment is not the central theme for this discussion; however, it is closely related to it. Several years ago when it seemed to have become generally accepted that focal infection was a cause of lupus erythematosus, and after having previously noted for quite a period of time the close relationship between lupus erythematosus rosacea, remembering also that many cases of rosacea in certain patients seemed sometimes to resemble tuberculid, I thought of trying gold in the treatment of rosacea. I have found that in a series of some fifteen or twenty cases the treatment of certain types of rosacea with intravenous gold is almost if not entirely as satisfactory as in the case of lupus erythematosus, though without clearing the focal infection. Of course, it is also subject to the same relapses. In our clinic, gold in rosacea has now become almost a routine treatment instead of roentgen therapy, though our number of cases is small compared to that of others.

DR. JOHN H. STOKES, Philadelphia: It is easy to say *the* cause. I wonder whether something might not be gained by dermatologists forming a habit of speaking of the predisposing and the exciting causes. Focal infection is undoubtedly an element. So equally without doubt on the California coast is Demodex, and so equally perhaps is the deficiency of hydrochloric acid in the peculiar intestinal flora which these patients develop. If one will concede the process to be a complex one, peace can be brought into these warring camps, and it is much easier to understand why one fails in an acne with this, why another fails in a rosacea with that, and why he also succeeds with something else. If he speaks of the rosacea background, which is the vascular element in the situation, and analyzes it into four or five constituents, he can then readily concede that a focal infection is perhaps the thing that pulls the trigger on the predisposing causes in a particular case. In the end this kind of multiple factorial analysis of a great many complex causal pictures in dermatology will bring a very much better understanding of the situation. It is difficult and extremely unwise to speak of sole causes in many dermatoses.

DR. HERMANN FEIT, New York: As Dr. Ayres brought out in his group of patients who live in California and belong to the better class of people, he finds a great many cases of Demodex folliculorum. It is interesting that a parasite of this kind is able to produce one of the erythemas. Dr. Solis-Cohen partly agrees with our observations as to the removal of focal infection to remove the symptom complex. Dr. Lain stated that he treats his cases of lupus erythematosus in the same way that he treats the cases of rosacea. As I tried to show in our diagram, it cannot be accidental that this butterfly pattern of the face is found in so many diseases, but I cannot agree with him that one should use the gold preparation, which has many dangers. It is not justified, in my opinion. I have seen quite a few accidents from gold. It is not indicated unless one is dealing with a tuberculous lesion. I don't know whom Dr. Stokes referred to when he said *the* cause of rosacea. If I said that focal infection is the cause of rosacea, I tried to explain that these bacterids come on only after the two first erythemas have developed. I think that I said purposely that in most cases the disease stopped at the second erythema, the congestive erythema, of which I showed the picture. Naturally, up to this point focal infection has absolutely nothing to do with the disease, and all the other factors that are so well known are the causes of this peculiar mechanism, but after this is established and the patient has a focal infection we believe that when it comes into the circulation it causes these papular and pustular eruptions.

TRAUMATIC SEGMENTARY ARTERIAL SPASM

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Every surgeon knows the serious consequences that may follow traumatic injuries that interfere with the necessary blood supply to any part of the body, especially the extremities. When the vascular obstruction is the result of something that was done in the course of a surgical operation or manipulation, the condition assumes a tragic aspect not only for the patient but also for the surgeon. Particularly in work on the extremities the surgeon is kept constantly on the alert in regard to the blood supply by visions of possible gangrene, amputation, ischemic palsy and malpractice suits. However, despite our knowledge and vigilance, accidents to a vital blood supply may occur and it is possibly safe to say that most surgeons of experience have encountered an alarming situation of this kind. Vascular trouble may arise from a number of very common agents, such as tourniquets, constricting splints, too tight suturing, the injection of anesthetic or sclerosing substances, or subfascial hematomas.

In our work at the Children's Memorial Hospital we have been confronted with two cases of arterial obstruction following operative procedures on the arm. The threatening clinical picture presented in these two cases and the fact that they did not seem to result from any recognized causative factor has prompted us to describe our observations in detail.

CASE 1.—A boy, aged 9 years, of Polish descent, entered the Children's Memorial Hospital, Sept. 30, 1930, with a history of having fallen down stairs about four weeks previously, injuring his right elbow. Following the accident the child complained

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of pain in the arm and the mother noticed that the elbow was swollen and discolored. No treatment had been administered except that his mother had applied alcohol and hot water bottles to his elbow. There was no history of any previous illness to be obtained and his family history was unimportant.

The physical examination was negative except for the right arm. The right elbow, which was larger than normal, was held in an extended position and could not be flexed. The condyles were displaced medially and posteriorly.

Roentgenograms showed a comminuted fracture through the condyles of the humerus, with posterior and median displacement of the fragments and callus formation. There was also a median dislocation of the radius and ulna.

An open operation under ether anesthesia was performed October 4, thirty-four days after the injury, and the bone fragments were alined and the dislocation of the radius and ulna was reduced. There was some difficulty in manipulating the bones into line, necessitating a definite amount of trauma to the soft tissues during the operation. The elbow was dressed in flexion at 90 degrees with a posterior molded splint. One hour after operation it was noticed that the forearm, hand and fingers of the injured arm were dead white and that no pulse was palpable in the radial and ulnar arteries. The dressings were immediately opened and the arm extended but no improvement in the circulation followed. Then in the fear that the wound had been sutured too tightly or that a ligature or suture had been inadvertently placed about the brachial artery the child was again anesthetized and the wound reopened. When the arteries were exposed it was evident that there was no visible or palpable pulsation in the brachial, radial or ulnar arteries and all three vessels appeared to be smaller than normal with no macroscopic evidence of injury. There was no indication of a thrombus formation and no ligature or suture was around any of the arteries. The wound was left open and warm moist dressings were applied with the arm elevated.

One hour later the ulnar pulse was palpable at the wrist and the color of the hand had returned to normal. The radial pulse did not return to normal until two days later. The wound was resutured five days after the second operation. No vascular disturbance followed and the healing was uneventful. When last seen, four years after the injury, there was no sign of circulatory trouble in the arm.

CASE 2.—A Polish boy, aged 5 years, entered the Children's Memorial Hospital April 28, 1934, complaining of an injury to his left elbow, sustained in a fall one hour before coming to the clinic. He had never had any serious injury before and the personal and family history was essentially unimportant.

The physical examination was negative except for the left arm, which showed a fusiform discolored swelling of the left elbow with a lateral angulation of the arm below the site of injury and marked tenderness over both condyles of the humerus. The condition of the forearm and hand was very striking. The skin everywhere distal to the elbow was dead white and distinctly colder than that of the opposite hand and forearm. No pulsation could be palpated in the radial or ulnar arteries of the injured arm.

Roentgenograms of the left elbow showed a supracondylar comminuted fracture of the humerus with marked lateral displacement of the lower fragments, and a posterior dislocation of the radius and ulna.

Four and one-half hours after the injury an attempt was made under nitrous oxide anesthesia to reduce the fracture dislocation. The manipulation apparently had no effect on the circulation of the forearm, for its appearance remained unchanged with no sign of any pulsation in the radial and ulnar vessels. The condition seemed to demand immediate relief, so the anesthetic was continued and the fractured area was exposed by an open operation. A large hematoma was removed from the antecubital region, but the distal circulation remained unchanged. Pulsations were seen and felt in the brachial artery down to within an inch of its bifurcation but not distal to this region, and no pulsations were present in the exposed radial and ulnar arteries. The pulsation ceased at a definite localized place as though the blood were striking against a solid structure. All three arteries appeared smaller than normal. There was no visible contusion or any laceration of the arteries, and no thrombus could be felt.

The arteries were not incised, but the wound was left wide open and warm moist dressings were applied with the arm elevated. On the following day the radial and ulnar pulses were still absent, but the hand was warm, the nails were not completely blanched, and after pressure on the skin there was some visible return circulation.

Three days after operation a weak but inconstant radial pulse was palpable for the first time since the injury. It improved very gradually, so that thirty days following the accident it was similar to and remained like that of the normal right arm.

May 9, eleven days after the first operation, the wound was sutured and a posterior molded cast was applied. The wound healed kindly and on June 20, fifty-three days after the injury, the fracture and dislocation were reduced by open operation with no circulatory disturbance.

We have presented here two cases of occlusion of the brachial artery, one immediately following a simple supracondylar fracture of the humerus and the other after an open operation to reduce a similar fracture. The absence of any pulsation was demonstrated by operative exposure of the vessels, but no evident cause for the condition could be found.

Our rather trying experience with these two cases which presented a condition with which we were unfamiliar led us to look up the literature on this subject. All the references were by continental European surgeons and by Farani,[1] a Brazilian. The earliest report we found was by Kroh [2] in 1915. He described two cases of traumatic arrest of the blood flow in the large arteries of the extremities following war wounds. On operative exposure of the vessels they appeared normal except that they were contracted in size. After massage in one case the circulation became reestablished. In the second case the femoral artery was seen to be contracted to the size of a knitting needle. To the author's surprise he noticed while the artery was exposed that it dilated to its normal size. In 1917 Kroh reported a third case involving the brachial artery. During operation the vessel was seen to be collapsed, but it dilated to its normal caliber after massage. In 1920 von Kuttner and Baruch [3] collected fifteen case reports and added eight cases of their own. We have found reports of seventeen cases published since that time. The addition of the two cases that we have described brings the total of reported cases to forty-four up to date. In many instances the reports were fragmentary and incomplete, so that deductions are rather difficult to make.

This vascular disturbance has been designated by various authors as "arterial stupor," "arterial contusion" and "traumatic segmentary inhibition of arteries." We have chosen to use the term traumatic arterial segmentary spasm, as it seems to be the most descriptive of this condition in which no pathologic changes are demonstrable in the affected vessels. Lexer [4] has stated that of all the vessel coats the intima is the most susceptible to trauma. However, it does not seem probable that the intima of the arteries in our cases could have been loosened enough to obliterate the lumen and yet allow the pulse to reappear after such a short period of time. Moreover, in the cases in which the affected segment of the artery was excised for treatment, the intima as well as the other vessel coats was found to be unchanged.

1. Farani, A.: Do espasmo vascular em cirurgia de urgencia, Brazil-med. **41**: 1364-1365 (Dec. 24) 1927.
2. Kroh, Fritz: Erfährungen einer Sanitätskompagnie, Beitr. z. klin. Chir. **97**: 344-396 (No. 4, Kriegschir. **2**, No. 8), 1915; Frische Schuszverletzungen des Gefäszapparates, ibid. **108**: 61-75, 1917.
3. von Kuttner, H., and Baruch, M.: Der Traumatische segmentäre Gefäszkrampt, Beitr. z. klin. Chir. **120**: 24, 1920.
4. Lexer, E.: General Surgery, American Edition, New York and London, D. Appleton & Co., 1910, pp. 549-550.

The vascular obstruction seems to be confined for the most part to the large arteries of the extremities. In this group of cases the femoral artery was affected in sixteen instances, the brachial artery in thirteen, the radial, popliteal and posterior tibial arteries three times each, the axillary twice, and the external iliac and the carotid once each. The causative factor in every case was some definite trauma. In twenty-six instances, many of them war casualties, the condition was ascribed to gunshot or high explosive injuries. Fractures involving the femur, radius or humerus were reported in ten cases. Among the other causes mentioned were a kick by a horse, a fall, vehicle injuries, airplane propeller contusion and operative wound trauma. It is noticeable that the gunshot injuries and fractures are blamed for thirty-six of the forty-four cases in this series.

The manner in which these traumatic agents produced such striking vascular changes has been a matter for discussion. Thrombosis must be considered, but in no case was a thrombus palpable and in those cases in which the artery was opened no thrombus was found. It does not seem probable that a thrombus would be removed or become canalized so rapidly that the circulation would return as soon as it did in these cases. Blood clots pressing on the artery were found in some cases, but their removal did not relieve the obstruction in any instance, and in the fracture cases there was no evidence of pressure of bone fragments on the arteries. From the absence of any pathologic change involving the artery and the complete return of circulatory function after a brief period, it would seem that the condition is one of arterial spasm probably on a basis of nerve disturbance, very likely a sympathetic nerve imbalance causing a spasmotic constriction of the artery. This theory is favored by Kroh, Reichle [5] and Finaly.[6]

That such a condition as vascular spasm exists is quite generally admitted. Makins [7] noticed that in a certain proportion of wounds in close proximity to large vessels a diminution of the normal caliber of the arteries was present shortly after the injury. Leriche [8] stated that oscillometric tests proved every traumatism in man to be a traumatism to vasomotoricity; furthermore, that always after a shock or a blow, though there is no wound or fracture, the peripheral nerve endings are excised and, by reflex action, will immediately disturb the equilibrium of the vasomotor system for a shorter or longer period of time. Leriche and Heitz [9] regarded an obliterated main vessel as a "nerve" the fibrous cord of which represents the segment of the vasomotor chain, since it contains the remnants of the perivascular sympathetic. Moreover, he thinks that the "nerve" is abnormal and has functions which are distorted.

Makins,[7] in discussing thrombosis, stated that the vessel may be narrowed both above and below the thrombosed spot and added that this was a condition usually seen when the normal arterial circulation is arrested either by a thrombus or by a large wound involving the lumen. Although he did not state that this is due to a nervous influence, it does indicate that some mechanism can affect a vessel causing it to be constricted enough to be visible to the naked eye.

Coller and Maddock [10] classify Raynaud's disease as a type of arterial spasm and state that pure spasm may be associated with other conditions such as anterior poliomyelitis. Morton and Scott [11] reported four cases of angiospasm following trauma in which painful spastic attacks were produced by exposure to cold, as in a case of Raynaud's disease, and Kerr noticed that during an attack of Raynaud's disease the radial pulse could not be felt in his patients. Lewis and Kerr,[12] in discussing this disease, stated that the vasodilatation is held in check or prevented by a simultaneous tendency to vasoconstriction. In the cases comprised in this report only the large arteries were involved, whereas according to Royle [13] in Raynaud's disease the small arteries and arterioles are the vessels that are affected.

Besides the evidence that sympathetic nerve involvement may cause arterial contraction there is also some evidence that somatic nerve involvement causes vascular changes. Bardenheuer [14] stated, in relation to fracture, that injury to the nerves often results in circulatory disturbance. Stapford [15] reported histologic changes found in the arteries of a limb in which the popliteal nerves were injured without damaging the popliteal vessels. Microscopic examination showed an endarteritis in the walls of the dorsalis pedis artery.

Also, some evidence has been produced to show that not all vascular changes are under nervous control. Kerr stated that local areas of blanching may appear in a skin that has been deprived of all nerve supply. This suggests a chemical factor that may control the size of the vessel, as hypothecated by von Kuttner and Baruch. Recently Smithwick, Freeman and White [16] showed that epinephrine caused marked vasospasm in man following complete sympathetic denervation of the extremities, and Odermatt [17] injected epinephrine perivascularly and was able to produce arterial spasm.

Von Kuttner and Baruch, Winterstein [18] and Laqua [19] favor the myogenic or arterial musculature contraction basis as the causative factor.

5. Reichle, Rudolph: Zur Frage des traumatisch- segmentären Gefäszkramp, Beitr. z. klin. Chir. **124:** 650-654, 1921.

6. Finaly, Rudolph: Acnut gangraen tegevolge von traumatische vaatkramp, Nederl. tijdschr. v. geneesk. **70:** 1038-1044, 1926; Akute Gangrän infolge traumatischen Gefäszkramp, ref. Zentralbl. f. d. ges. Chir. **35:** 106, 1926.

7. Makins, G. H.: Surgical Experiences in South Africa (1899-1900), ed. 2, London, Oxford University Press, 1913, pp. 1-48; Gunshot Injuries of the Arteries, Brit. M. J. **2:** 1569-1577, 1913; On the Vascular Lesions Produced by Gunshot Injuries and Their Results, Brit. J. Surg. **3:** 353-421, 1916; Cerebral Embolism Consequent on the Reception of Gunshot Injury to the Carotid Arteries, Lancet **2:** 543-546 (Sept. 23) 1916; Gunshot Injuries to the Blood Vessels, New York, William Wood & Co., 1919, 1-251, 1919; Lancet **1:** 30, 1920; Specimens Showing the Effects of Gunshot Injury on the Heart and Blood Vessels, Brit. J. Surg. **8:** 107-132 (July) 1920.

8. Leriche, R.: Problem of Osteo-Articular Diseases of Vasomotor Origin; Hydrarthrosis and Traumatic Arthritis; Genesis and Treatment, J. Bone & Joint Surg. **10:** 492-500 (July) 1928; De l'importance en pathologie et en thérapeutique des reaction vaso-motrices post-traumatiques, Médecine **9:** 341-342 (Feb.) 1928.

9. Leriche, R., and Heitz, J.: Résultats de la sympathectomie péri-artérielle dans le traitment des troubles nerveux post-traumatiques d'ordre réflexe, Lyon chir. **14:** 754-792 (July-Aug.) 1917.

10. Coller, F. A., and Maddock, W. G.: The Function of Peripheral Vasoconstriction, Ann. Surg. **100:** 983-992 (Nov.) 1934.

11. Morton, J. J., and Scott, W. J. M.: The Measurement of Sympathetic Vasoconstrictor Activity in the Lower Extremities, J. Clin. Investigation **9:** 235-246, 1930; Studies on the Activity of the Lumbar Sympathetic Nervous System, Ann. Surg. **92:** 919-930 (Nov.) 1930; The Differentiation of Peripheral Arterial Spasm and Occlusion in Ambulatory Patients, J. A. M. A. **97:** 1212-1215 (Oct. 24) 1931; Some Angiospastic Syndromes in the Extremities, Ann. Surg. **94:** 839 (Nov.) 1931; Sympathetic Activity in Certain Diseases, Especially Those of the Peripheral Circulation, Arch. Int. Med. **48:** 1065-1097 (Dec.) 1931.

12. Lewis, Thomas, and Kerr, W. J.: Experiments Relating to the Peripheral Mechanism Involved in Spasmodic Arrest of the Circulation in the Fingers: A Variety of Raynaud's Disease, Heart **15:** 7-101 (Aug.) 1929. Kerr, W. J.: Recent Experimental Studies on Raynaud's Disease, Tr. A. Am. Physicians **45:** 189-201, 1930.

13. Royle, N. D.: The Surgical Treatment of Raynaud's Disease and Similar Conditions, M. J. Australia (supp. 11) pp. 341-343 (Nov. 5) 1927.

14. Bardenheuer, Bernhard: Die permanente Extensions-behandlung der subcutanen und complicierten Fracturen and Luxationen der Extremitäten und ihre Folgen, Stuttgart, F. Enke, 1889.

15. Stapford, J. B., quoted by Makins.

16. Smithwick, R. H.; Freeman, N. E., and White, J. C.: Effect of Epinephrine on the Sympathectomized Human Extremity, Arch. Surg. **29:** 758-767 (Nov.) 1934.

17. Odermatt, quoted by Laqua.[19]

18. Winterstein, O.: Ueber Gefässverletzungen mit Beiträgen zur traumatischen segmentären Arterienspasmus und zur traumatischen Thrombose der Vena subclavia, Schweiz. med. Wchnschr. **55:** 360-365 (April 23) 1925 (ref. Zentralbl. f. Chir. **52:** 2487-2488 [Oct.-Dec.] 1925).

19. Laqua, K.: Der segmentäre Gefäszkrampf. Beitr. z. klin. Chir. **137:** 673-676, 1926.

Veau, Viannay, Lacoste and Ferrier [20] recognized three states of traumatic segmentary arterial spasm:

1. The lowest state: This is a vasoconstriction detectable only by the sphygmomanometer. There is only a partial arrest of arterial circulation.

2. State of confirmed stupor: In this type there is complete arrest of circulation.

3. Grave state: This is characterized by a complete permanent arterial circulatory arrest with gangrene of the extremity from the very beginning.

Probably similar states may occur elsewhere in the body. This vascular disturbance may be somewhat analogous to the condition of local nerve shock following gunshot wounds in which there is a temporary loss of sensation and power in the injured limb. A similar explanation may be given to the absence of hemorrhage in completely divided arteries lying exposed in an open wound. Also, such a condition may be present in the occurrence of cerebral symptoms that immediately follow injury or ligature of the carotid arteries.

The diagnosis of a case of arterial spasm following injury is very difficult without operative exposure of the artery, as was done in our cases. However, such diagnoses have been made by Farani without previous experience and also by others after experience with a few cases. One wonders whether some of the measures used in other vascular diseases might be of diagnostic value in traumatic segmentary arterial spasm. Brown [21] employed intravenous injection of a foreign protein, typhoid vaccine, as a test for vascular spasm. He showed that in spastic vascular disease of the arteries the injection of foreign protein causes the extremities to become decidedly warmer but that in obliterative disease the increase in temperature is none or very slight. For a similar purpose Morton and Scott suggested the use of local, spinal and general anesthesia and they interpreted their results similarly to Brown's. However, general anesthesia was employed in both our cases with no subsequent rise in temperature. The Pascon oscillometer would be of diagnostic aid in the mild cases in which occlusion is not complete.

Lexer stated that a positive diagnosis of complete rupture or closure by thrombus formation of the principal artery can be made if after injury the extremity becomes cool, pale or cyanotic and the pulse can no longer be felt. Our cases showed these symptoms, yet no thrombus was present. Thus arterial spasm can exhibit a clinical picture that would tend somewhat to disprove Lexer's statement.

The time of disappearance of the spasm is fairly uniform. In most of the cases the spasm had disappeared in twenty-four hours. In a case of Soubeyran and Michon [22] the spasm was present to some extent for more than a year. In our cases the radial pulse returned in one hour in one instance and not until the third day in the other, although signs of improved circulation were evident after twenty-four hours.

The outlook in cases of arterial spasm is good so far as life is concerned, as there was only one death in this series that was attributable to the vascular condition. In that case the artery was exposed and massaged. When this failed, a segment of the artery was excised and death ensued. One other death occurred in this series but it was undoubtedly due to shock, as the pulse in the femoral artery returned to normal after hot serum irrigations. The foot became warm and the posterior tibial pulse was palpable.

Amputation of the limb was performed on six of the forty-four patients because of gangrene. Four patients had sustained gunshot wounds that caused infection and arterial spasm. A similar condition occurred in another case following a lacerated wound. In the final case the gangrene was probably due to improper treatment. The arterial spasm complicated a simple fracture of the femur. The femoral artery was exposed in three places. Hemorrhage and gangrene followed, necessitating amputation.

Concerning the treatment, there seems to be no doubt that the conservative measures should be tried first. When the diagnosis of traumatic segmentary arterial spasm is most probable, it is suggested that if a recent fracture or dislocation is present it should be reduced or that if some other mechanical cause is found for the absent pulse it should be removed. If this fails to bring about a return of the circulation, an open operation should be undertaken immediately and the artery exposed at the site of the trauma. However, Farani and Reichle do not subscribe to this view. Farani did not operate on any of his three patients and all recovered. Reichle suggested that one might wait eighteen hours before operation is undertaken to see whether the circulation will return. Most surgeons, however, will probably not have the diagnostic ability or the fortitude to employ this passive treatment but will feel that their patient and their own peace of mind will be served better by an open exposure of the artery. If this shows an arterial spasm, the simple treatment that was used in a number of the cases in this series, including our own, would seem to be sufficient. The wound is left open and continuous warm moist dressings are applied, with the arm kept at rest in elevation.

Various surgeons have employed other methods. Kroh massaged the artery in the open wound and the circulation returned to normal immediately. Ducastaing [23] successfully irrigated the exposed artery with warm serum, but Soubeyran failed with this method. Von Kuttner and Baruch suggested the use of atropine but evidently did not employ it.

Incision into the artery to search for the thrombus was considered in our second case but fortunately it was not done. In opening into the artery one must always remember that suture may not be successful and that a thrombosis or vessel hemorrhage may occur and make vessel ligation mandatory. After four cases of simple ligation of the brachial artery complicating fracture of the humerus, Makins had a resulting gangrene in three instances.

For the more grave cases in which the arterial spasm does not yield to the simple methods, periarterial sympathectomy, ganglionectomy and concomitant vein ligation have been suggested. Ligation of the artery or excision of the affected segment of the artery would seem to be contraindicated in the treatment of this acute condition but might be tried.

Possibly one of the most promising methods of treating peripheral arterial occlusion is that recently

20. Veau, V.; Viannay, C.; Lacoste and Ferrier: La stupeur artériele, Presse méd., Aug. 15, 1918, pp. 425-426. Viannay, C.: Lacoste and Ferrier: La stupeur artérielle, Bull. et mém. Soc. de Chir. de Paris (Rapport de M. V. Veau) **44:** 1321-1329 (July 17) 1918. Viannay, C.: La stupeur artérielle, ibid. **44:** 1322-1323 (July 17) 1918. La stupeur artérielle traumatique, Presse méd. **27:** 106-107 (Feb. 27) 1919.

21. Brown, G. E.: The Treatment of Peripheral Vascular Disturbances of the Extremities, J. A. M. A. **97:** 1212-1215 (Oct. 24) 1931.

22. Soubeyran and Michon: Note sur un cas de contusion artérielle, Bull. et. mém. Soc. de Chir. de Paris **44:** 805-808 (May 1) 1918. Soubeyran: A-propos de la stupeur artérielle, Bull. et mém. Soc. de Chir. de Paris **45:** 908-910 (June 4) 1919.

23. Ducastaing, R.: Note sur quatre cas de stupeur artérielle traumatique, Buli. et mém. Soc. de chir. de Paris **45:** 604-611 (April 2) 1919.

employed by Reid [24] and his associates, who use intermittent increased and decreased air pressure by means of an air tight chamber applied to the extremity.

Amputation should be performed only as a last resort when a definite gangrene is present. We mention this particularly because among the six cases in this series in which amputation was done there is one reported by von Kuttner and Baruch in which the limb was removed under the impression that the artery was thrombosed or severed but the vessel was found to be normal.

We are aware that this subject of traumatic segmentary arterial spasm may be more familiar than the literature would indicate. The knowledge that we have gained in our two experiences will be a comforting reassurance to us in our future work.

SUMMARY OF PREVIOUSLY REPORTED CASES

A brief summary of the previously reported cases is as follows:

CASE 1 (reported by Kroh).—Sex and age unstated. Patient received a revolver wound of the right groin. The femoral artery was exposed at an open operation and a segment of the artery, 5 cm. in length, was seen to be contracted to the size of a knitting needle. The exposed artery was watched for five minutes and then it dilated to its normal size. The saphenous vein had been shot across. Recovered.

CASE 2 (reported by Kroh).—Sex and age unstated. Patient was wounded in the femoral region by an infantry shot. The artery was not operated on but the leg was massaged and the femoral pulse was normal in twenty-four hours. Recovered.

CASE 3 (reported by Kroh).—Sex and age unstated. Injury was a gunshot wound in the humerus region. At an open operation the contracted artery was massaged and it dilated in the wound to normal size. Recovered.

CASE 4 (reported by Viannay).—Male, age unstated. Injured by an airplane propeller in the region of the brachial artery. At open operation 5 cm. of the clavicle was resected and the sheath of the artery only was opened. Recovered.

CASE 5 (reported by Viannay [20]).—Male, age unstated. Grenade injury. Axillary artery involved in spasm as seen in open operation. Artery was not disturbed. Recovered.

CASE 6 (reported by Viannay).—Sex and age unstated. Grenade wound in the axillary region. Open operation was performed on the arm but the axillary artery was not disturbed. Recovered.

CASE 7 (reported by Viannay).—Sex and age unstated. Grenade wound. Radial artery involved in spasticity. Open operation and segment of the artery excised. Recovered.

CASE 8 (reported by Viannay).—Male, age unstated. A bullet wound of the left femoral region. Treated by open operation and a segment of the artery was resected, after which the artery bled. Recovered.

CASE 9 (reported by Lacoste and Ferrier).—Boy, aged 14 years. Sustained a subtrochanteric fracture of the femur. Cause unstated. Leg was placed in an extension apparatus. Arteriotomy was performed in three places. Gangrene of the leg and amputation followed. Recovered.

CASE 10 (reported by Fiolle [25]).—Man. aged 22. Received a bullet wound in the femoral region. At open operation massage of the femoral artery failed to cause return of circulation. Segment of artery was excised. Died.

CASE 11 (reported by Soubeyran and Michon).—Man, aged 22. Infantry shot of the femoral region. Femoral artery involved. At operation, only the artery was exposed. For a year following the patient suffered from a neuralgia.

CASE 12 (reported by Ducastaing).—Male, age unstated. Grenade wound of the thigh. The foot was cold, insensitive, and could not be moved. The patient was in shock. Ten hours after injury, wound excision was performed in Scarpa's triangle. No pulse was present in the femoral artery, the sheath of which was opened. After hot serum irrigation the pulse was palpable. General condition did not improve and the patient died.

CASE 13 (reported by Ducastaing).—Male, age unstated. Received a grenade wound of the lower third of the upper arm, with a fracture of the humerus. Radial pulse was absent. Operated on thirteen hours after injury. The vessel wall was intact. Foreign body removed. Artery irrigated with hot serum and almost instantly pulsation began. Recovered.

CASE 14 (reported by Ducastaing).—Male, age unstated. Received a grenade wound of the inner portion of the lower third of the thigh. Operation ten hours after injury. The popliteal artery was intact and not pulsating. After serum irrigation the pulse was present. Recovered.

CASE 15 (reported by Ducastaing).—Male, age unstated. Patient received a bullet wound of the inner side of the left upper arm. Tourniquet had been applied for six hours. Operated on eight hours after injury. Large hematoma present. No pulsation in the brachial artery but when the muscular branches of the artery were incised there was continuous bleeding. Artery was ligated with hot serum and pulsation returned. Recovered.

CASE 16 (reported by Maury and Daban [26]).—Man, aged 33. Small grenade wound of posterior median side of lower part of the right upper arm. Humerus was fractured. At open operation the brachial artery pulsated and had a normal caliber in the upper wound but distally a segment 3 cm. was filiform. In the contracted region the artery was hard. Artery not incised or disturbed. Recovered.

CASE 17 (reported by Soubeyran).—Male, age unstated. Had multiple grenade wounds of the extremities, but a wound of the right external malleolus was of special interest. At open operation a small projectile was found behind the achilles tendon and the posterior tibial artery was found contracted. Hot serum irrigation did not cause a return of circulation and 3 cm. of artery was resected. No thrombus was present in the resected portion but two tiny openings were found in the artery wall. Recovered.

CASE 18 (reported by Abadie [27]).—Details unstated.

CASE 19 (reported by Delbet [28]).—Details unstated.

CASE 20 (reported by Tuffier [29]).—Female, aged unstated. Spasm of the radial artery resulted from opening the artery for a transfusion. No special treatment employed. Recovered.

CASE 21 (reported by von Kuttner and Baruch).—Male, age unstated. Injured by a hand grenade. Had a marked hemorrhage and was in shock. Multiple injuries of the lower extremities and buttock. Operated on four hours after the injury under ether. Posterior tibial artery found contracted and 2.5 cm. of the artery was resected. The resected portion was found to be normal and no thrombosis was present. Recovered.

CASE 22 (reported by von Kuttner and Baruch).—Male, age unstated. Grenade wound of the upper leg. The leg was livid in color but voluntary motion was present. Under ether anesthesia five hours after injury it was found that the femoral artery did not pulsate and was contracted a distance of 2.5 cm. Three hours after operation the pulse was normal but again disappeared, then appeared and disappeared again and finally became normal. Recovered.

CASE 23 (reported by von Kuttner and Baruch).—Male, age unstated. Grenade wound of the arm and numerous other places on the body. The brachial artery was spastic. The median nerve was lacerated. The artery was exposed but not operated on and the following day the pulse was normal. Recovered.

CASE 24 (reported by von Kuttner and Baruch).—Male, age unstated. Bullet wound of the left upper arm. Radial pulse

24. Hermann, L. G., and Reid, M. R.: Passive Vascular Exercise, Arch. Surg. **29**: 697-704 (Nov.) 1934. Reid, M. R.: Diagnosis and Treatment of Peripheral Vascular Disease, Am. J. Surg. **24**: 11-35 (April) 1934.

25. Fiolle, J.: L'inhibition segmentaire des artères dans les plaies de guerre (Rapport de P. Duval) Bull. et mém. Soc. de chir. de Paris **44**: 996-1002 (June 5) 1918.

26. Maury, E., and Daban, E.: Un cas d'inhibition segmentaire traumatique de l'artère humérale, Bull. et mém. Soc. de chir. de Paris **45**: 604-611 (April 2) 1919.

27. Abadie, quoted by von Kuttner and Baruch.[3]

28. Delbet, P.: Un cas de segmentaire traumatique de l'artère humérale, Bull. et mém. Soc. de chir. de Paris **45**: 609-610 (April 2) 1919.

29. Tuffier: Un cas de segmentaire traumatique de l'artère humérale, Bull. et mém. Soc. de chir. de Paris **45**: 610 (April 2) 1919.

absent. Open operation. Brachial artery exposed but not operated on. Recovered.

CASE 25 (reported by von Kuttner and Baruch).—Sex and age unstated. Machine gun injury of the knee region. There were symptoms of arterial occlusion and the popliteal artery was thought to be in spasm. The leg was not operated on but was conservatively treated by elevation and warm dressings. Recovered.

CASE 26 (reported by von Kuttner and Baruch).—Sex and age unstated. Bullet wound of the upper leg. Pulse absent in the dorsalis pedis and tibialis posterior. Patient in shock. The leg was not operated on but was treated by elevation of the leg and a Volkmann's splint. Recovered.

CASE 27 (reported by von Kuttner and Baruch).—Male, age unstated. Grenade wound of the right knee region. Beginning gangrene after sixteen hours. Popliteal artery was involved in spasm and an amputation was performed at the knee. To his (Baruch's) great surprise, the artery, vein, and nerve were intact. Final result unstated.

CASE 28 (reported by von Kuttner and Baruch).—Male, age unstated. Wounded by an infantry bullet in the region of the right sternocleidomastoideus. Operated on six hours after injury and the carotid artery had a collar-like spastic area 3 cm. long, the size of a goose quill. Recovered.

CASE 29 (reported by Reichle).—Young man. Sustained a fractured femur in a railroad accident. Right femoral artery exposed without further operative procedure. Recovered.

CASE 30 (reported by Reichle).—Male, age unstated. Had a gunshot wound which fractured the femur. At operation a waistlike narrowing of the femoral artery was seen. Gangrene of the leg and amputation followed. Final result unstated.

CASE 31 (reported by Gallo and Calcagno [30]).—Boy, aged 8 years. Fell on left elbow, fracturing the humerus. Operative exposure of the brachial artery. Artery punctured with needle and serum injected into the artery. Recovered.

CASE 32 (reported by Winterstein).—Man, aged 54. Fell 3 meters. Brachial artery spastic. Treated conservatively without operation. Recovered.

CASE 33 (reported by Winterstein).—Girl, aged 10 years. Run over by an automobile. At open operation the femoral artery was incised and then sutured. Recovered.

CASE 34 (reported by Winterstein).—Man, aged 43. Was kicked by a horse. Operative exposure of the external iliac artery showed it to be in segmentary spasm. Artery not incised. Treated by elevation of the leg. Recovered.

CASE 35 (reported by Frassi [31]).—Male, age unstated. Grenade wound of the right popliteal region. Lost all feeling from the knee down, soon after the injury. Under ether anesthesia the popliteal artery was exposed and found to be in spasm. On massage of the artery pulsation returned. Gangrene of the leg followed, with amputation at the middle third of the thigh. Recovered.

CASE 36 (reported by Frassi).—Male, age unstated. Injured by a bomb explosion causing multiple wounds of the face and ocular bulbs, fracture of the right radius and tibia, and articular lesion of the right knee. Radial pulse was absent. At open operation the brachial artery was found to be spastic. Massage of the artery and irrigation with dilute solution of sodium hypochlorite failed to cause a return of pulsation. Suppuration of the forearm occurred, necessitating amputation of the arm at its middle third. Final result unstated.

CASE 37 (reported by Finaly).—Woman, aged 19. Revolver shot of the right upper leg. The pulse distal to the wound was absent for twenty-four hours and the femoral artery was spastic. The bullet was removed at operation, but the femoral artery was not disturbed. Recovered.

CASE 38 (reported by Finaly).—Youth, aged 19 years, a mine worker. Received a lacerated wound of the upper leg. The pulse distal to the wound was absent. Femoral artery involved in spasm. Gangrene of the leg extending above the knee required amputation. Final result unstated.

CASE 39 (reported by Finaly).—Youth, aged 17 years, a mine worker. Received a wound of the right leg and abdomen with tearing of the bowel as the result of being crushed between two mine wagons. Intestine resected. Femoral artery thought to be involved in spasm but leg not operated on. Toes became gangrenous. Final result unstated.

CASE 40 (reported by Farani).—Sex and age unstated. Open fracture of the femur with partial crushing of the soft parts of the inferior third of the thigh. Pulsations of the foot and tibial regions absent. After careful examination of the injured region the author was convinced that there were no actual lesions of the tibial vessels. Conservatively treated. Recovered.

CASE 41 (reported by Farani).—Sex and age unstated. Had an abdominal traumatism and gunshot wound of the upper third of the arm. The radial artery did not pulsate. The distal arm showed a temperature lower than its fellow. The author was convinced that there was no important arterial lesion and that the brachial artery was involved in spasm. Arm immobilized only. Recovered.

CASE 42 (reported by Farani).—Sex and age unstated. Had a comminuted fracture of the lower third of the forearm with crushed soft parts. Radial pulse absent after the fracture. The author took the risk of thinking that there was no arterial lesion and treated the case without operation and he merely treated it as an open fracture. Recovered.

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30. Gallo, A. G., and Calcagno, B. N.: Sobre un caso de estupor arterial traumatico, Semana méd. **29**: 238-240 (Aug. 3) 1922; Ueber einen Fall von traumatischen Arterienspasmus, ref. Ztschr. f. Chir. **20**: 75, 1923.

31. Frassi, L.: L'inibizione segmentaria delle arterue secondaria a ferita, Osp. maggiore **8**: 65-71, 1920.

A NEW AMPUTATION IN THE LOWER THIRD OF THE THIGH

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This description of an amputation through the distal extremity of the femur records a sufficient number of novel features to justify its report as a new operation.

The essential details of the operation in summary are as follows: The anterior flap includes the soft tissues of the upper part of the leg as far as the level of the tibial tuberosity, while the posterior flap is a little longer and extends well down on the gastrocnemius muscle. The popliteal vessels and nerves are ligated through an amuscular and avascular cleavage plane on the medial aspect of the low thigh. All the hamstring muscles are severed at their tendinous insertions on the tibia, and the femur is sectioned in the condylar flare, just proximal to the adductor tubercle. The patella is dissected from the anterior flap from the joint side, leaving the rectus femoris tendon in the floor of the patellar fossa to act as an end-bearing buffer for the femur. No coapting primary sutures are used throughout the operation save four to six skin clips or sutures, which hold the flaps roughly in position. As the edges of the flaps unite, the posterior flap retracts gradually but very extensively until the femur occupies the patellar fossa snugly, and the suture line is located well up behind the stump end.

The advantages this operation offers over other lower third thigh amputations, including the Gritti-Stokes operation, and the simplicity of the procedure warrant a detailed description of the operative technic and an analysis of the results thus far obtained.

After the operation has been described in detail, a number of considerations of major interest in amputations in the lower third of the femur in general will be taken up. Features of this operation will be con-

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trasted with those of the routine amputations of the thigh near this level, and an attempt will be made to evaluate the differences evident from this contrast.

DESCRIPTION OF OPERATION

The diagrams illustrate the stages of this amputation in the lower left thigh. The patient is placed in the dorsal decubitus position, the knee of the diseased extremity is flexed slightly, and the leg is elevated a little above the horizontal on one or two sandbags. No tourniquet is applied. The surgeon stands on the side opposite the affected extremity and faces the medial aspect of the thigh and knee to be operated on. He maintains this position throughout the operation because the essential steps are directed through a medial approach to the popliteal space. From this position the operative work on the lateral part of the low thigh and knee are accomplished readily by rotating the knee medially.

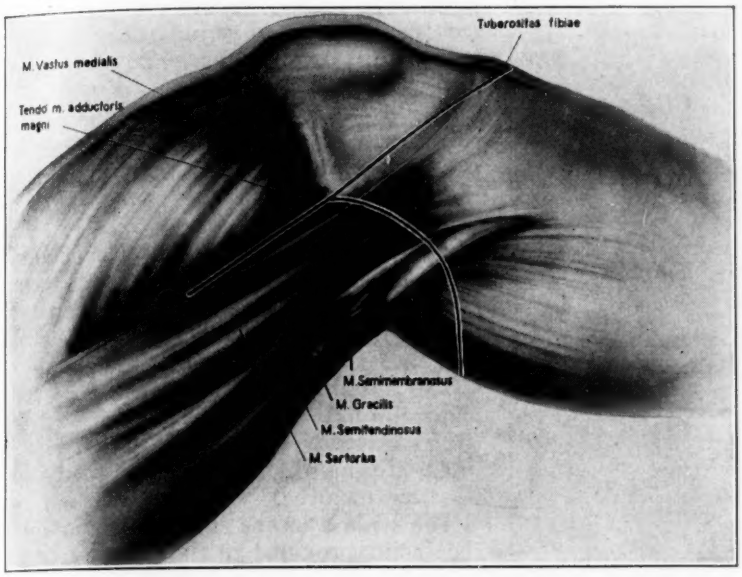

Fig. 1.—Medial surface of left thigh and knee: Skin incisions on medial side of the low thigh and knee marking long anterior and posterior flaps. Attention is directed to the amuscular and avascular interspace between the vastus medialis and sartorious muscles. Note that the flaps for this low thigh amputation are derived from the soft parts of the leg.

The skin incisions (figs. 1 and 2) outlining the slightly unequal anterior and posterior flaps are at the same level as the incisions that sever all the deeper soft parts. The incision on the medial aspect of the thigh begins at a point three fingerbreadths proximal to the most prominent part of the medial femoral condyle (fig. 1) and runs horizontally distally in the palpable groove between the vastus medialis and the sartorius muscles. With the knee in partial flexion this groove can be defined readily. After the incision has been deepened to the enveloping or deep fascia of the thigh, the adductor tubercle of the medial femoral condyle and the tendon of the adductor magnus muscle, which inserts on it, can be palpated. The skin incision continues distally over the medial epicondyle, sweeps forward, and crosses the anterior surface of the tibia at the anterior tibial tuberosity, the point of insertion of the quadriceps extensor tendon.

The thigh then is rotated medially (i. e., toward the surgeon). The skin incision on the lateral aspect of the leg, as outlined in figure 2, begins at a point three fingerbreadths proximal to the lateral femoral condyle in the palpable groove between the tendon of the tensor fasciae latae (iliotibial tract) and the biceps femoris muscles. The incision must be made very close to the tensor fasciae latae tendon in order to avoid the muscular fibers of the biceps. Continuing distally over the lateral epicondyle, the incision extends forward to meet the medial incision at the anterior tibial tuberosity, thus outlining the anterior flap of the amputation.

Corresponding incisions from each femoral epicondyle are carried obliquely posteriorly and inferiorly until they meet on the calf of the leg at a point a little inferior to the level of the anterior tibial tuberosity. This incision for the posterior flap is deepened to the fascia on the gastrocnemius muscle. Thus are outlined two long amputation flaps, the posterior a little longer than the anterior. Each flap partakes not only of the soft parts of the lower thigh but of a considerable portion of the soft tissue of the leg.

Attention again is directed to the medial aspect of the thigh and knee (fig. 3). The horizontal portion of the medial incision, common to the two flaps, i. e., that portion lying between the vastus medialis and the sartorius muscles, is deepened through the deep fascia of the thigh. Division of this powerful fascial layer, which is the only strong structure in the medial wall of the popliteal fossa at this level, affords ingress to the popliteal space. The left fore-

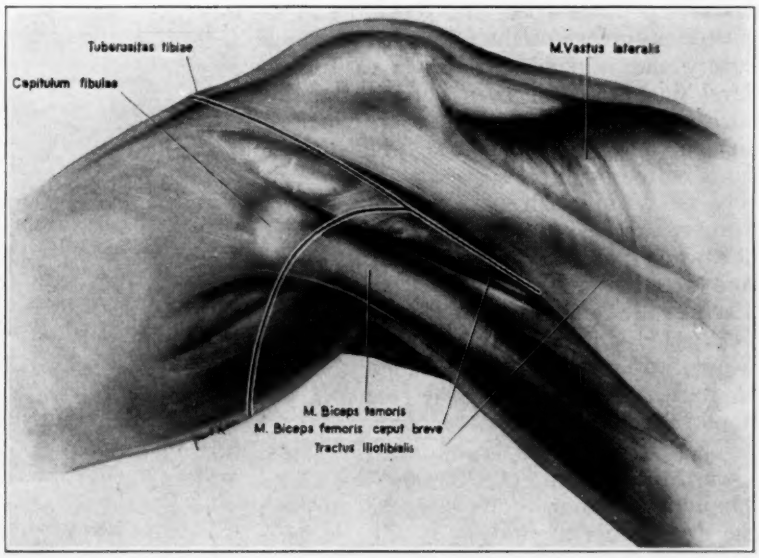

Fig. 2.—Lateral surface of left thigh and knee: Skin incisions on lateral side of the low thigh and knee marking long anterior and posterior flaps. Attention is directed to the amuscular and avascular interspace between the tendon of the tensor fasciae latae (iliotibial tract) and the biceps muscles. The biceps muscle is composed of fleshy fibers almost down to its insertion on the head of the fibula.

finger, now inserted shallowly into the popliteal space (inset in figure 3), frees the medial hamstring tendons to their tibial insertions by blunt dissection. At this juncture these tendons are divided in the order named: sartorius, gracilis, semimembranosus and semitendinosus. During this dissection, no fleshy portion of anv

of the medial hamstring muscles nor any part of the vastus medialis muscle need be exposed, much less severed. The severed hamstring tendons retract at once into the aponeurotic and areolar tissue of the posterior flap and are not dealt with again. Further exposure is gained by severing the tendon of the adductor magnus muscle at its attachment to the adductor tubercle. Free access to the vasculoneural contents of the popliteal space thus is afforded. Moderate flexion of the knee relaxes the popliteal vessels and nerves and favors their manipulation. With a finger now inserted more deeply into the popliteal space and kept close to the posterior surface of the femur, the popliteal artery and vein are withdrawn easily to a level flush with, or even outside, the skin incision (fig. 4). Here they are clamped, ligated, and divided as near the superior apex of the popliteal space as is convenient. The tibial (internal popliteal) and common peroneal nerves then are drawn readily into the wound as one trunk (inset, figure 4) and are anesthetized, ligated and divided. Each of the components of the nerve bundle is injected with absolute alcohol to prevent neuroma formation, and the stump is allowed to retract into the proximal recess of the popliteal space.

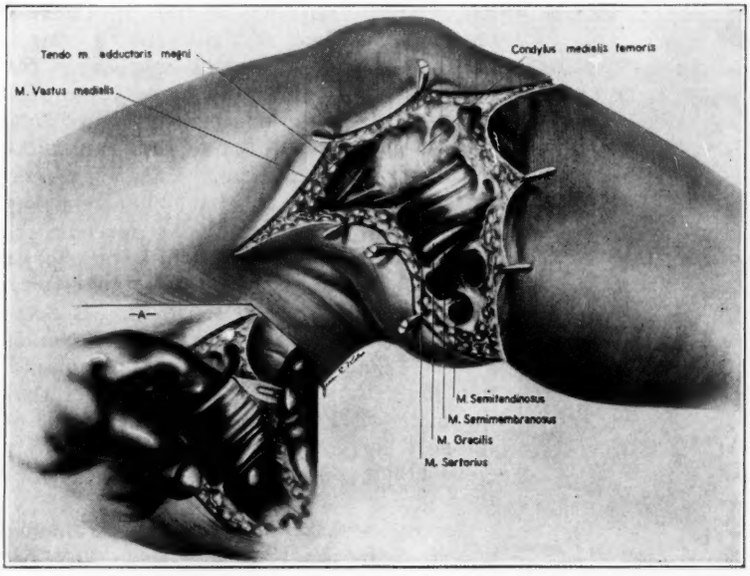

Fig. 3.—Medial surface of left thigh and knee: Deepening the flap incisions through the deep fascia on the medial aspect of the knee to expose the medial hamstring muscles. Inset shows the bunching of the medial hamstring tendons at their insertion on the tibia, and the method of their section.

The partly flexed knee now is rotated toward the operator (fig. 5), and the lateral longitudinal skin incision is deepened through the deep fascia of the thigh. The incision is carried through the deep fascia as far as the insertion of the biceps muscle on the head of the fibula, where the biceps tendon then is severed. At this stage of the operation the popliteal space may be opened widely from side to side since the essential structures have been divided. Deepening of the incision marking the posterior flap down to the gastrocnemius aponeurosis and clearing from it the areolo-adipose débris free the posterior flap. It is advantageous to leave the fibro-areolar tissue of the popliteal space in contact with the femur as far down as the level of the adductor tubercle in order that there may be as little dead space as possible between the posterior flap and the femur.

The knee then is extended (fig. 6) and the incision marking the distal portion of the anterior flap is deepened through the capsule of the knee joint down to the femoral condyles and to the tibia, thereby severing the quadriceps tendon at its insertion into the tibial tuberosity.

The anterior flap containing the patella is dissected upward off the infrapatellar fat pad and drawn upward on the thigh until the superior synovial recesses of the subquadriceps space are seen (fig. 7). The patella is dissected from its sesamoid position in the quadriceps tendon, care being taken to preserve the longitudinally disposed tendon of the rectus femoris muscle, which runs over it (inset, figure 7).

The preservation of this tendon adds materially to the end-bearing capacity of the stump after the cut end of the femur is fitted into the socket from which the patella has been removed.

The synovia on the anterior flap and over the femur proximal to the condyles is not excised.

The femur now is sawed through its cancellous portion just proximal to the adductor tubercle (fig. 8). At this level the shaft of the femur has expanded to a size that approximately corresponds to the patellar socket in the quadriceps tendon. The cut end of the femur is rounded with a rasp until no sharp surfaces and no fringes of periosteum remain.

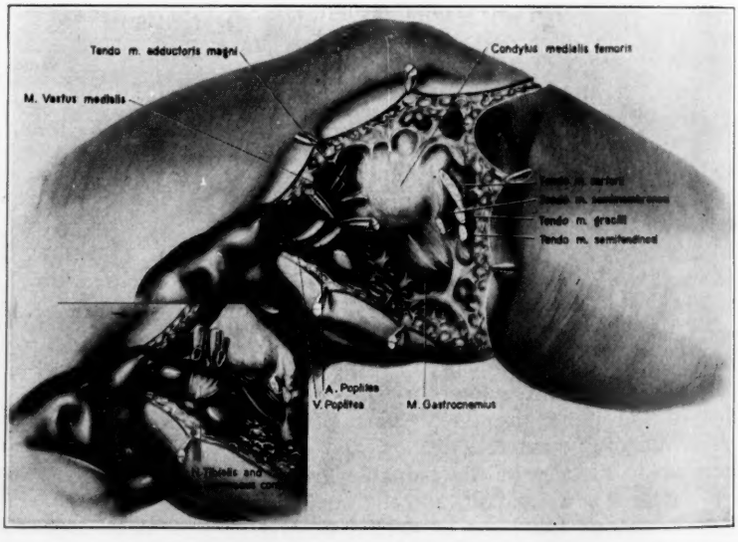

Fig. 4.—Medial surface of left thigh and knee: Further deepening of the flap incisions on the medial aspect of the knee. The vessels and nerves in the popliteal space are sectioned. The main drawing shows the retraction of hamstring muscles after section at their tendinous insertions on the tibia. The contents of the popliteal space now are widely accessible and the vessels are ligated. The inset demonstrates the method of securing and dividing the tibial and common peroneal nerves.

The two large flaps are inspected now for small bleeding points. These can be ascertained best by sluicing the surfaces of both flaps with large quantities of warm salt solution. This flushing has the additional advantage of washing away small soft tissue and bone

débris. Many small bleeding points may require ligation after this procedure. Inspection of the body of the posterior flap shows no muscle fibers but only areolo-adipose tissue and the cut ends of the hamstring tendons. These tendons already are retracted into their aponeurotic beds and are scarcely visible. The flaps now are allowed to fall together loosely (inset *B*, figure 8.

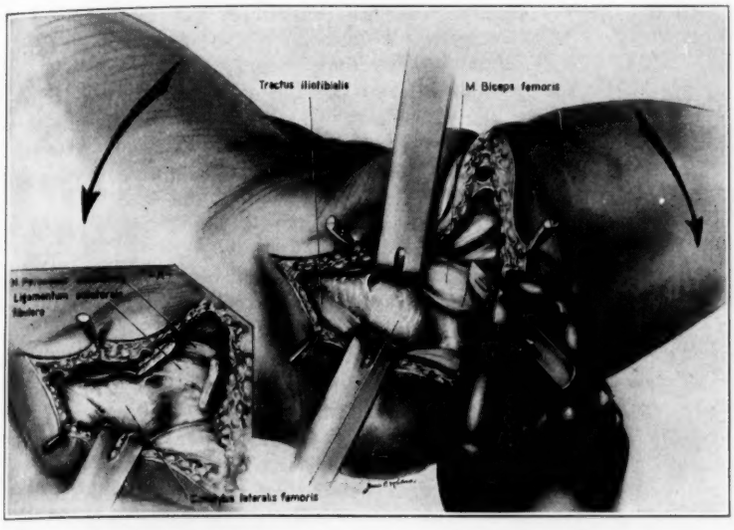

Fig. 5.—Lateral surface of left thigh and knee (knee rotated medially toward surgeon): Deepening of the flap incisions on the lateral aspect of the knee. Left knee forcibly rotated medially. The interval between the iliotibial tract and the biceps muscle is defined and the biceps is sectioned at its insertion on the head of the fibula. The inset indicates the structures deep to the biceps tendon. The common peroneal nerve already has been sectioned through the medial approach (fig. 4).

The only coapting suturing during the operation is in the form of not more than four to six clips or sutures placed at such intervals as to keep the flaps in fair apposition (fig. 9). When the skin edges are approximated, the aponeurotic edges also lie in contact; mere apposition is sufficient to produce firm union. None of the tendons or aponeuroses of the anterior flap are sutured to the corresponding structures of the posterior flap. In this way no structure is under any tension, and the trauma and consequent pressure necroses resulting from suture of these deeper structures therefore cannot occur. The flaps appear exceedingly long and even extend an inch or more beyond the femur end immediately after they are fashioned. To the surgeon accustomed to the routine type of low third femur amputation, the flaps will appear excessively redundant and clumsy, and he will fear that a bulbous stump-end and large dead spaces will result. He will wonder, too, when he notes how wobbly the femur lies between the flaps, how the femur end will gain contact with the patellar socket and fuse there. During the early days of convalescence, the reason for leaving these flaps under no tension appears. At the end of the second or third postoperative day and sometimes even within a few hours after the operation, the hamstring muscles, severed only at their distal attachment, contract to the degree that the skin suture line lies posteriorly placed at about the level of the stump-end, and the femur is felt in the patellar fossa.

POSTOPERATIVE CONVALESCENCE

After the operation, the stump is wrapped snugly in a gauze roll and the patient is returned to bed. He is able to sit upright in bed in the evening of his operative day and can be placed in a wheel chair during the next day or two. Daily dressings are required because an abundant serosanguineous oozing between the skin edges may take place for several days in spite of the most meticulous hemostasis. The drainage gradually lessens. The absence of primary suturing, other than that necessary for flap approximation, minimizes the pocketing of fluid accumulation and allows all secretions to escape through the wide intervals between the skin clips. Usually the major oozing stops in from one to three days. When this drainage has ceased, the skin edges between the sutures placed at the time of the operation are approximated carefully by additional skin clips. These clips are applied readily without anesthesia. This procedure, which has been adopted only in the most recent cases, has resulted in complete union of the flap edges within a week. The time of convalescence has been decreased remarkably in this fashion.

As convalescence progresses, the posterior flap retracts gradually until the suture line, now posterior in position, is well proximal to the bone end, occasionally a distance of one or more inches (fig. 10). When it is recalled that the suture line at the end of the operation is an inch or more distal to the bone end, it becomes apparent how extensive is the power of the intact hamstring muscles to retract the posterior flap. In a short time the femur is lodged securely in the patellar fossa, thus assuring great stability to the soft parts of the stump. There is excellent end-bearing because of the presence of the rectus femoris tendon, the elements of the prepatellar bursa, and of tough skin over the bone end. The patient can extend his stump powerfully, a requisite in any thigh amputation.

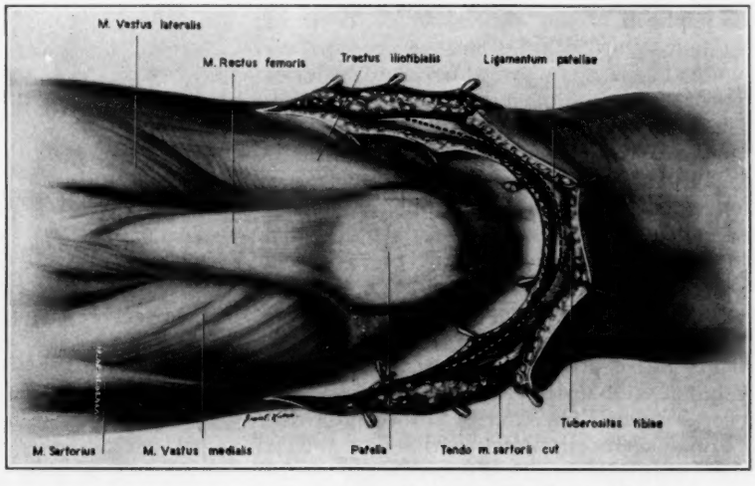

Fig. 6.—Anterior surface of left thigh and knee: The incision marking the anterior flap is deepened through the knee joint capsule and infrapatellar tendon down to the tibia.

In this series, healing has taken place in four weeks on the average. In the last three cases, in which the skin edges between the primary suture points were approximated secondarily by additional clips, healing was complete at the end of a week.

ANALYSIS AND COMPARISON OF THE FEATURES OF THIS AMPUTATION WITH THOSE OF THE ROUTINE LOW THIGH AND GRITTI-STOKES AMPUTATIONS

Vascular Considerations.—Control of Blood Supply: The common use of a tourniquet of one kind or another in thigh amputation should be limited to the very exceptional case. That the pressure consequent on its use may provoke thrombosis in vessels in which none heretofore has been present, and that a greater degree of thrombosis may be caused in a vessel in which a moderate amount already exists, are very real dangers which should contraindicate its use. In altogether too many patients the tourniquet still is advocated and used in the routine type of low thigh and knee amputations.

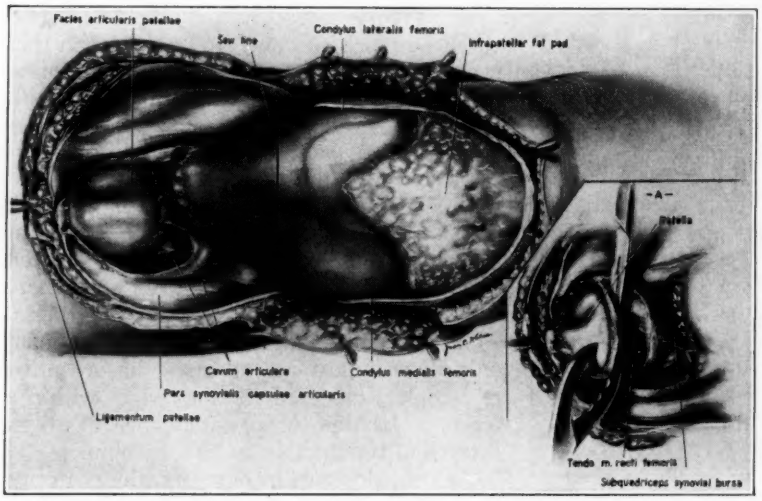

Fig. 7.—Anterior surface of left thigh and knee: Upward dissection of the anterior flap and removal of the patella from the joint side. The saw line in the main drawing is well done into the condylar flare. The inset shows the sharp dissection of the patella from its fossa in the quadriceps tendon, leaving the rectus femoris tendon intact to act as a buffer for the cut end of the femur.

The common practice of waiting to ligate the popliteal vessels until after any or all of the hamstring muscles are severed in the popliteal space by way of the posterior approach is a clumsy procedure. In addition to the shock attendant on severing large muscles in their fleshy portions, there usually is considerable hemorrhage from their section when the main blood supply as yet has not been controlled. I advocate the medial approach to, and ligation of, the popliteal vessels through the avascular and amuscular space illustrated in figure 4.

Importance of the Profunda Femoris Artery in Regard to the Nourishment of the Amputation Flaps: Attention is directed to several points of interest concerning the profunda femoris artery and its terminals. The profunda, practically speaking, is the artery of the tissues of the thigh. With the peripatellar arterial circle, with which it anastomoses, it also can nourish the skin and subcutaneous tissue of the knee and upper part of the leg, certainly for a considerable distance below the joint line. The superficial femoral artery gives off no important branches in the thigh save the suprema genu (anastomotica magna).

Visual operative evidence repeatedly has demonstrated to me that the profunda artery alone is able to nourish the skin and subcutaneous tissue of the upper leg to a degree sufficient to enable upper leg flaps in this thigh amputation to heal readily. Proof of this occurred in five cases of amputation. The popliteal artery was filled with thrombus, did not bleed on section, and therefore could not have furnished blood to the superficial structures about the knee and the upper leg. Nevertheless, the leg flaps, cut as outlined in figures 1 and 2, contained small spurting vessels in their edges, vessels which were derivatives of the profunda arterial tree. In these cases of obliteration of the popliteal artery, the medial and lateral circumflex branches of the profunda anastomosed with the arterial network about the knee and furnished adequate blood supply to the anterior flap in our amputation. The posterior flap is nourished by the terminals of the perforating system of the profunda. The flaps in each of these five cases united readily into strong stumps with no loss of tissue substance along the suture line. Why it is that the profunda artery and its terminals so often remain permeable in obliterating disease of the superficial femoral artery and its tributaries is not known.

Length of Amputation Flaps.—It is common knowledge about the routine types of lower third thigh amputations that the premature contraction upward of the posterior flap, actuated by contraction of the hamstring muscles, is one of the usual causes of infection, a danger often leading to reamputation. Extensive retraction of severed hamstring muscles is to be expected when one realizes that all but a part of one of these muscles arise on the pelvis and span a practically uninterrupted arc to their insertion on the tibia. Only the short head of the biceps femoris has its origin on the shaft of the femur.

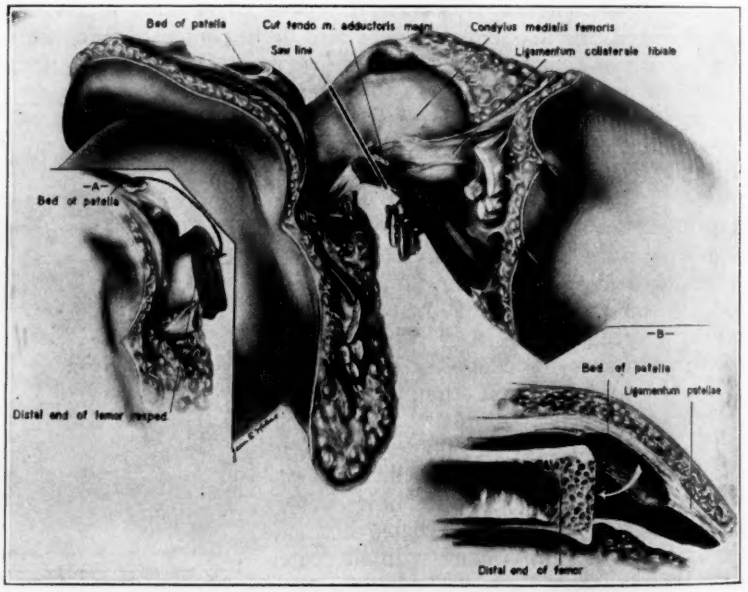

Fig. 8.—Medial surface of left thigh and knee: Section of the femur after formation of long anterior and posterior flaps. Inset *A*, the patella fossa is ready to receive the cut end of the femur. Inset *B* shows the anterior flap loosely approximated to the posterior flap. As the flaps unite and the posterior flap retracts, the patellar fossa lodges the femur end.

The components of the quadriceps muscle are the essential retractile elements in the anterior flap. All

these components save the rectus femoris, however, arise from the shaft of the femur through a very considerable portion of its extent. Consequently there is only a short span of muscle unattached to the femur which can exert a pull on the quadriceps tendon, whether that tendon is divided in the suprapatellar area as in the routine tendoplastic amputation or in the infrapatellar portion as in the Gritti-Stokes and my own operations. The tensor fasciae latae muscle with its origin on the iliac crest and the dorsum of the ilium near the anterior superior spine is inserted distal to the level of the greater trochanter into the iliotibial tract, a specialized portion of the fascia lata of the thigh. Severance of this tract proximal or distal to the patella does not result in marked retraction of this aponeurotic unit, mainly because of the short span of the muscle bundle that activates it.

As a result, the anterior flap in any thigh amputation retracts very little, while the posterior may retract to an extraordinary degree. In our amputation the tibial attachments of the hamstring tendons and not the muscle bellies are severed, as a result of which all the hamstring contractle elements are in the posterior flap. Consequently a much greater amount of retraction of this flap occurs than in the routine low thigh and Gritti-Stokes operations, in which the hamstring muscles are divided in their fleshy portions. In order to allow retraction to take place without tension, I fashion the anterior as well as the posterior flap from the skin and subcutaneous tissue of the upper part of the leg.

Stump Length and Weight Bearing.—Too often the ordinary amputation in the lower third of the femur results in a bone length inadequate for leverage on a prosthesis. Especially is this true when a secondary amputation is required because at the original operation the flaps, the posterior one particularly, were made too short. Sometimes even during the first amputation the femur has to be resawed at a higher level to allow flap approximation.

I find no fault with the length of the stump in a Gritti-Stokes operation. This procedure, however, is difficult technically and is one in which there often is a poor functional result. It is not a simple matter to remove accurately the cartilage-bearing part of the patella in such a manner as to fit the remainder of this bone snugly against the sawed end of the femur, and there acquire bony union. Any leg maker can relate many instances in which the patella has failed to unite with the femur. Even when the soft parts in the amputation heal, the patella, as the result of nonunion, may wobble somewhat in its position on the femur end or may slide to one side or completely off the end of the bone. Even when bony union between the patella and femur occurs, the irregular shape of the patella often precludes functional end-bearing. When infection occurs in the suture line, a result usually of too much tension from too short a posterior flap, union between patella and femur rarely occurs. In my experience in these cases, the patella and often a segment of femur are sacrificed when reamputation is resorted to.

In my amputation the femur is sectioned at a constant level, one just proximal to the adductor tubercle, thus affording a stump length equal to that in a Gritti-Stokes amputation. At this level the femur presents a broad weight-bearing area, which is about double that of the femoral shaft and much greater than that of the patellar extremity of a Gritti-Stokes stump. Since the flaps are exceedingly long, they are adequate to cover this femur length and are under no tension. Should infection occur, it can be eliminated before contraction of the hamstring muscles has shortened the posterior flap to the extent that a resawing of the femur is required. Reamputation has not been necessary in any of my cases.

The patellar socket gradually lodges the femur end in the amputation I have described. Union between the femur end and the rectus femoris tendon, which floors the patellar socket, soon becomes firm and painless. There is no such accuracy of apposition demanded between opposed structures as in the Gritti-Stokes operation, and infection does not vitiate the result.

The classic lower third femur amputation stump often is not end bearing, but the properly made Gritti-Stokes stump sometimes is. The stump in my operation bears weight directly because of its broad bearing surface and the substantial fibrous coverings afforded the femur end. The femur fits closely in the patellar socket against the tendon of the rectus femoris muscle. In addition, the prepatellar bursa and the thick skin over the knee are well adapted to pressure.

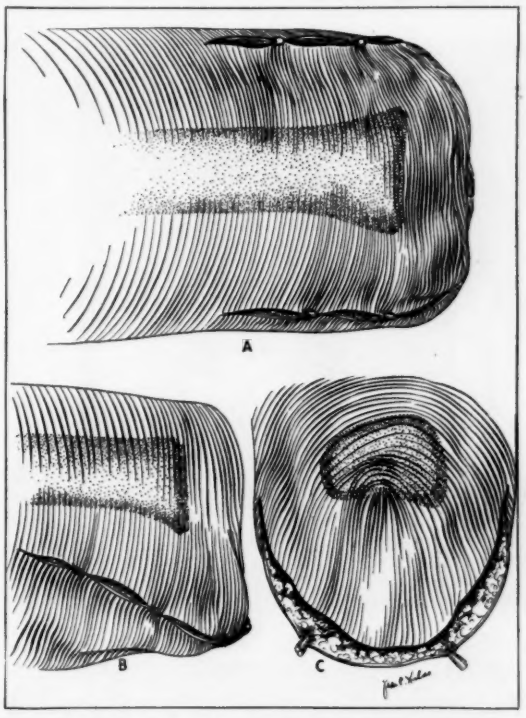

Fig. 9.—Transparency drawings to show the location and size of the condylar end of the femur in the redundant amputation stump. *A* is a view of the stump from the front; *B* is the stump seen from the side; *C* is the stump viewed from the end before the clips have been placed. The skin clips are the only means of approximating the flaps at the time of operation.

The stump in the amputation I am describing and that in the Gritti-Stokes procedure have an important feature in common. This is the slightly bulbous stump end, the result of sectioning the femur within the flare of the condyles. The distal flare of the resulting stump allows the leg maker to fit a prosthesis, the thigh cuff of which grasps the stump above the condylar flare and keeps out loose motion in lifting the leg and moving it backward and forward.

Pyogenic Wound Infection.—Most infections in routine lower third and Gritti-Stokes amputation stumps are the result of too great a tension on the suture line. This is caused by making the posterior flap too short. I believe that a posterior flap cut in the popliteal space usually is too short to allow attachment to the anterior flap without considerable tension. If the femur is sec-

tioned in the upper part of its lower third, tendinomuscular flaps can be cut sufficiently long to cover the bone end without serious tension. This does not mean, however, that in the course of the first few postoperative days the suture line in certain instances will not be under sufficient strain to result in necrosis and subsequent infection. This, from a knowledge of the amount of retraction that takes place in the posterior flap in my operation, must occur when the lower limit of the posterior flap extends only to the middle of the popliteal space, as so many illustrations of this operation indicate. I have seen failures to heal on this account in my series of Gritti-Stokes cases. Infection following tension necrosis at the suture line is propagated to the severed fleshy parts of the hamstring muscles. Extensive infection often necessitates a frank open reamputation. When infection occurs in the Gritti-Stokes operation, not only the patella but often a segment of the femur must be sacrificed.

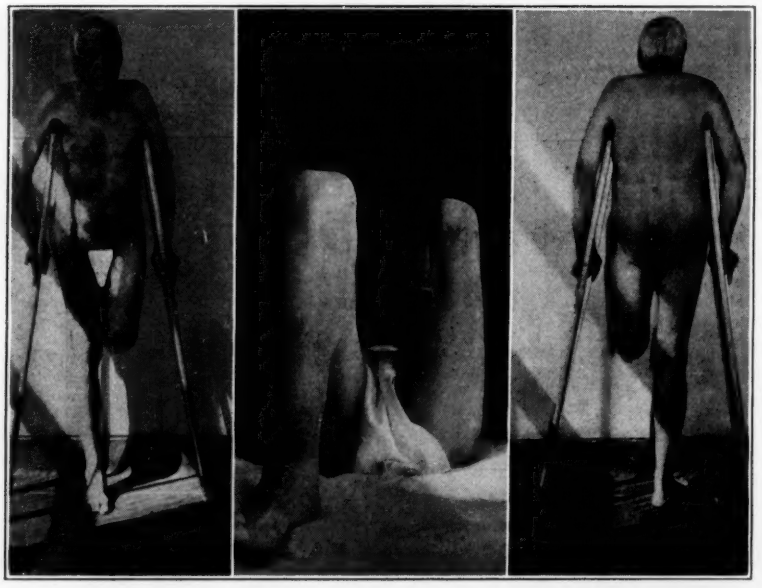

Fig. 10.—Anterior, posterior, and close-up views of amputation stump. The suture line is placed well proximal to the stump end. This patient is now able to walk with a full end-bearing prosthesis.

In the usual lower third femur amputations, large *en masse* sutures frequently are used to approximate the flaps. These ligations predispose to necrosis of the included tissue. Dead spaces with no access to the outside may be created; in these spaces, infection often develops. From these infected closed spaces, pus may extend up the connective tissue spaces and muscle bundles of the posterior thigh more readily than out through the tightly closed suture line or through paths created by drains. Drainage material plunged into the depths of the amputation cavity created by suture of the flaps may lead to infection in the deeper tissues.

In my operation, every precaution is taken to insure against infection. First, the posterior flap is cut so long that tension between it and the anterior flap cannot exist. Only late in convalescence is there any tension whatever on the line of union between the two flaps. One of the greatest safeguards against infection in the stump itself and to propagation of infection up the thigh is the section of the hamstring muscles at their tendinous insertions on the tibia. By operating through natural intermuscular cleavage spaces, no hamstring muscle fibers are seen or sectioned. This is equally true of the quadriceps muscle, which is sectioned in its infrapatellar tendinous portion. The fleshy muscle bellies and their tendons proximal to the point of section thus maintain their normal anatomic relations. They remain surrounded and protected by the enveloping deep fascia of the thigh and popliteal space and by the fibrous inward prolongations from this parent aponeurosis. It is difficult to see how infection can extend up the thigh under these circumstances. Anatomically the popliteal space is a closed cavity, there being no communication with the upper part of the thigh through the vascular ring in the adductor magnus muscle. Since no hamstring muscle belly has been cut in this operation, no muscle planes are left open for upward extension of infection. The anterior flap is not dissected proximally enough to expose muscle bundles. Leaving the synovia on the under surface of the anterior flap and in the subquadriceps bursa interposes a barrier to the upward extention of infection. Removal of the patella after the anterior flap has been turned upward exposes no muscle fibers to infection. In my operation, no area of skin and subcutaneous tissue is dissected from the deep fascia. This insures against the spread of infection up artificial planes.

Another unique safeguard against infection is the absence of suture tension on any structure in the amputation stump. A few skin clips, placed at widely spaced intervals at the cut edges of the flaps, are the only means of flap approximation at the time of operation. Mere contact without suture suffices for union of the aponeurotic elements. The wide intervals in the skin edges left between clips are adequate for the free drainage of tissue juices. The exudation of blood-stained serum may be copious for the first few postoperative days, but it diminishes gradually as convalescence goes on. This postoperative oozing of serum is a safeguard against infection which otherwise might result from contamination of loculated fluid collections. The placing of additional clips between the clips used at the time of operation in order to get better skin approximation is not done until the postoperative oozing has stopped and until it is demonstrated that infection has not taken place.

Gas Bacillus Infection.—In our service in the San Francisco Hospital up to the time of the development of the amputation here described, gas bacillus infection has occurred in thigh amputation stumps of eleven patients out of sixty operated on for arteriosclerotic gangrene. Ten out of eleven of these patients died. Gas bacillus infection occurred seven times in the thigh amputation stumps of thirty-one patients operated on for diabetic gangrene. Five of these patients died. This infection has occurred eighteen times in the stumps of forty-six patients who had thigh amputations for gas bacillus infection in compound fractures and severe lacerations below the knee. Twelve of the eighteen patients died.

Reflection as to the cause of the development of gas bacillus infection in thigh amputation stumps was an important factor leading up to the elaboration of the amputation technic under discussion. The predilection of gas bacilli for muscle tissue, the longitudinal spread of infection up individual muscles and groups of muscles, and the growth of these organisms in the absence

of oxygen are observations too frequently made to be incorrect. In gas bacillus infection it is noteworthy that aponeurotic, tendinous and subcutaneous structures are spared early and sometimes even late in the disease.

As a result of these observations, it seemed that an amputation which would expose no thigh muscles to actual contamination, save in their tendinous insertions, would lessen the probability of complicating gas bacillus disease. In addition, the ideal amputation should have the added feature of being able to be left open. The necessity for open amputation is required when the operation is performed close to the site of infection. By this procedure, anaerobic conditions in the stump are avoided and the danger of upward spread of infection from distal foci is minimized. In the operation under discussion, the flaps are of sufficient length to allow the wound to be packed open over a period of time if necessary without their retracting to a degree that makes later closure by simple approximation impossible.

Recumbent Convalescent Period.—In the routine low thigh and Gritti-Stokes amputations, tissues often are on such a degree of tension that it becomes necessary to apply skin traction to relieve the suture line. Skin traction may relieve tension on the skin suture line but has little or no effect on the tautness of the aponeurotic line of closure. Movement of a stump under tension is painful and requires recumbency for a period of days. The patients with our thigh amputation never require skin traction and are able to sit up in bed on the day of their operation and be in a wheel chair the day following amputation. Since there is no tension on the elements of the stump, free movement is comparatively painless. Danger of pneumonia from enforced recumbency is lessened materially.

Operative Shock.—Shock from bleeding and from section of the hamstring muscle bellies has occurred in many cases of routine thigh amputation. There is very little intra-operative or postoperative shock from the operation I am describing. This lack of shock I attribute to two factors: control of hemorrhage by early ligation of the popliteal vessels and the severing of muscles only in their tendinous insertions.

Mortality.—Mortality from thigh amputation will be decreased very considerably if the technic as outlined is followed meticulously. The factors that lower the mortality rate are: lessened shock from adequate control of blood supply and from section of muscles only in their tendinous insertions; diminished incidence of pneumonia from a lessened period of recumbency; decreased tendency to anaerobic or aerobic infection because no structures are under tension, this being the result of long flaps and little suturing; ready exit for the serum produced in the wound, and the lessened incidence of reamputation, which in itself carries a considerable death rate.

Thus far fourteen amputations have been performed according to this method. The majority of these patients were over 70 years of age. One has died, a mortality of about 7 per cent. This man was 84 years of age and died eleven days after his operation from a coincidental pneumonia. His amputation was the second in the series and at the time of his operation I did not know that I could get the patients up almost immediately. It is likely that his pneumonia could have been averted by the process of getting him into a wheel chair on the second postoperative day, the procedure I adopted in all later cases. His amputation wound was fairly clean and had united partially. In thirteen of these fourteen cases amputation was done for arteriosclerotic or for diabetic gangrene. One amputation was done for intractable compound fracture near the knee.

Mortality statistics of thigh amputations vary widely. Much depends on the condition of the patient. The best of the larger series show a death rate of 15 per cent, while the series in the city hospitals and relief homes show much higher figures. Prior to the development of this operation, the mortality of thigh amputations in our service in the San Francisco City Hospital exceeded 50 per cent.

450 Sutter Street.

COMMINUTED COLLES' FRACTURES IN ELDERLY PATIENTS

METHODS OF TREATMENT AND END RESULTS IN THIRTY CASES

G. E. HAGGART, M.D.
BOSTON

The treatment of uncomplicated Colles' fracture is now well recognized. While the methods employed by different operators reveal many variations in procedure, the underlying principles are quite similar. However, in comminuted Colles' fracture, especially when occurring in elderly patients, it is believed that the results

Fig. 1.—"Sugar tong" plaster splint removed from arm (reprinted from New England Journal of Medicine [2]).

Fig. 2 (case 2).—Appearance of "sugar tong" plaster splint applied.

can be greatly improved, particularly by longer splintage than is usually employed, and also by attention to certain details as herein described. In a previous communication a method of treatment for this fracture was presented with particular emphasis on the duration of splintage, which in these older patients averaged six

From the Department of Bone and Joint Surgery, Lahey Clinic.
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weeks as compared with a total of from two to three weeks for similar injuries in younger adults.

The present paper is a report of the results obtained in the treatment of thirty elderly patients, aged from 58 to 70, with comminuted Colles' fracture. To illustrate the significance of prolonged splintage, properly applied, as well as the importance of fracture observa-

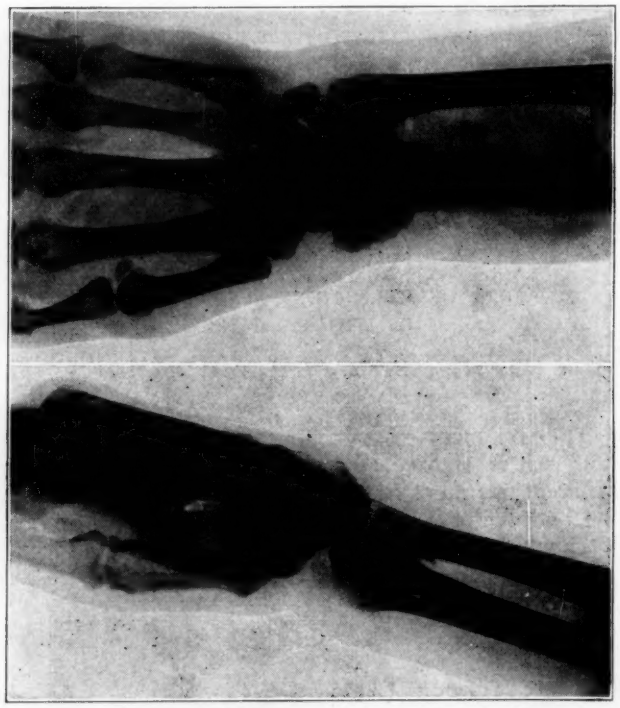

Fig. 3 (case 2).—Roentgen appearance on admission of comminuted Colles' fracture in woman aged 68. Observe marked displacement of radio-ulnar joint.

tion under the fluoroscope, these thirty cases are divided into two groups: group 1, fifteen cases in which posterior or anterior and posterior forearm splints were applied for an average of three and a half weeks; group 2, fifteen cases wherein the fracture was completely immobilized by means of the sugar tong plaster splint for an average of six weeks. All fractures in the latter group were reduced and the position then checked by fluoroscopic vision. The results in the second group of cases were definitely better than those in group 1, as shown in the accompanying table.

A survey of these cases indicates that comminuted Colles' fracture in elderly patients should be treated as a distinct group compared with similar fractures in younger adults. The following observations are significant:

1. Owing to the relatively brittle avascular bones of elderly individuals, comminution of fragments is more frequently observed at the time of reduction. Such comminution may not be evident in a preoperative roentgenogram.

2. Bony union in these patients is delayed as compared with the same fracture in younger adults. In some elderly patients complete bone repair may not occur even though the fracture is perfectly reduced. Magnuson [1] believes that this is due to disintegration of bone cells at the end of each fragment with consequent loss of bone substance. Delay in healing is particularly prone to occur at the dorsal fracture line in the radius where the distal dorsal end of the proximal radial fragment tends to absorb. Hence, bone repair is often so far from complete that following the usual time of splintage—that is, from two to three weeks—a partial to complete recurrence of the deformity takes place on resumption of the use of the hand, notably the act of dorsiflexion.

3. It is often necessary to hold the hand in palmar flexion and ulnar deviation in order to prevent displacement of the comminuted radial fragments. Fluoroscopic vision of the fracture will determine whether this position is indicated. To maintenance of this flexed wrist position is ascribed the occurrence of flexor muscle contracture following removal of the splint. This complication was not observed in the cases in group 2; for, with the fracture well healed and following the institution of active exercises and intensive massage, all patients in this group rapidly regained active dorsiflexion of the hand. In three patients of group 1, who were splinted an average of three and a half weeks, and in one patient splinted five weeks, the return of function at the wrist was impaired because of partial recurrence of the deformity owing to resumption of active motion when bone repair was not complete.

Summary End Results in Thirty Elderly Patients with Comminuted Colles' Fracture: One Year Follow-Up *

	Average Duration of Splintage, Weeks	Type of Splint			Reduction Visualized Under Fluoroscope	Anatomic Result			Functional Result		
		Posterior	Anterior-Posterior	Sugar Tong		Good	Moderate	Bad	Good	Moderate	Bad
Group 1 15 cases	3½	4	7	4	6	5	7	3	6	8	1
Group 2 15 cases	6	0	0	15	15	12	3	0	10	5	0

* Good result, including perfect, within 10% normal; moderate result, able to do original work or activities but with "slight subjective or objective defect," from 70 to 90% normal; bad result, unable to do original work, with pain and deformity, from 50 to 70% normal.

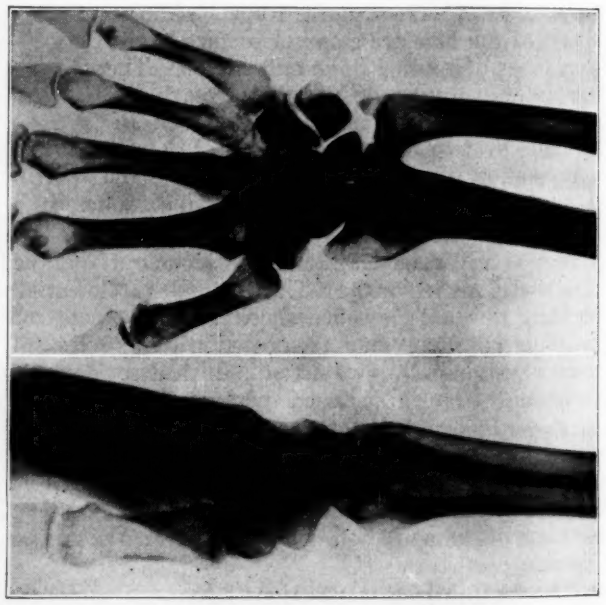

Fig. 4 (case 2).—Roentgen appearance one year and three months after admission; normal finger and wrist motion.

1. Magnuson, P. B.: Fractures, Philadelphia, J. B. Lippincott Company, 1933, p. 167.

4. To secure satisfactory alinement in these comminuted fractures and to determine the most favorable position in which to hold the fragments, reduction under the fluoroscope is particularly helpful. Such visualization of the fracture is indeed essential to decide whether palmar flexion of the hand is necessary for holding the fragments. Since the adoption of this technic for all cases of comminuted radial fractures (group 2 cases), the average amount of palmar flexion of the hand has been between 10 and 20 degrees. In

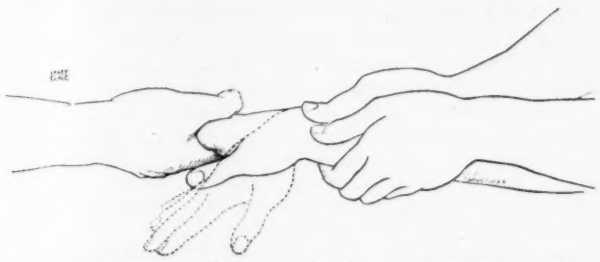

Fig. 5.—Molding radial fragments into alinement, traction maintained, after first breaking up impaction by manipulation (reprinted from New England Journal of Medicine [2]).

six cases the hand was placed in the midposition, as under the fluoroscope the fragments were found to remain in excellent alinement. Obviously with this relatively slight degree of wrist flexion muscle contracture is not prone to occur, even though the part is splinted an average of six weeks.

TECHNIC OF REDUCTION OF COMMINUTED COLLES' FRACTURES

The following procedure was employed in all the group 2 cases and in six of the patients classified in group 1. This technic is the method now utilized at the Lahey Clinic in reduction of all Colles' fractures.

Anesthesia.—These fractures are most satisfactorily reduced under a general anesthetic. In our hands, local anesthesia for comminuted Colles' fractures has not been satisfactory. Blocking of nerve trunks with procaine hydrochloride at the elbow or shoulder may be considered if general narcosis is contraindicated.

At the present time these elderly patients are given either tribrom-ethanol anesthesia, an average of 70 mg. per kilogram of body weight; or, in cases in which a rapid uncomplicated reduction is anticipated, intravenous N-methyl-cyclohexenylmethylmalonylurea sodium is employed. Reenforcement with nitrous oxide (ethylene is not used in the fluoroscopic room) is rarely necessary with tribrom-ethanol but may be indicated following N-methyl-cyclohexenylmethylmalonylurea. Tribrom-ethanol anesthesia has been particularly satisfactory because of the adequate relaxation, absence of postoperative nausea and vomiting, and the fact that in the dark fluoroscopy room omission of anesthesia apparatus is appreciated.

Reduction.—A wide strap or band is passed about the midarm and tied to the table; this furnishes a fixed point against which the operator can maintain steady traction and yet have complete control of the hands, wrists and forearm. Impaction of the radial fragments is first broken up by manipulation and then, with traction maintained, the fragments are molded into alinement by firm pressure of the operator's thumb passing distally over the dorsum of the patient's wrist (fig. 5). This maneuver brings the patient's hand into volar flexion, thus fixing the reduced radial fragments in position. If necessary, the fragments are alined by slight ulnar deviation of the hand.

Fluoroscopic observation of the reduction is obtained as indicated. It is particularly helpful in checking the anatomic relations of the radiocarpal and distal radioulnar joints. To determine the position of the hand that best maintains the alinement of the fragments and to make certain of resumption of a normal joint relationship, fluoroscopic vision is essential. With this position decided on, it is then held by the operator, and an assistant applies the "sugar tong" plaster splint.

Splint. — The "sugar tong" plaster splint (fig. 1) originally devised by Simpson, is one of the most efficient and at the same time simplest appliances that can be utilized in fractures of the forearm. The splint consists of a plaster-of-paris bandage reverse, covered on one side by canton flannel. The length of the splint is determined by the distance from the knuckles up the dorsal forearm, around the elbow and down the volar surface of the forearm, to the base of the fingers. Trimmed at the wrist so that the plaster edges will not overlap and cut out over the thenar eminence, the splint, after having been well rubbed but while still moist, is applied to the elbow, forearm, wrist and hand and bandaged snugly in place with a gauze bandage (fig. 2).

It is particularly important to note that the respective ends of the plaster terminate at the knuckles on the dorsum and just proximal to the base of the fingers on the volar surface of the hand (fig. 6). When properly applied, this splint permits the patient complete normal range of flexion-extension in all the interphalangeal and metacarpophalangeal joints. In addition to anterior posterior immobilization of the radius and ulna, by passing around the elbow the splint also prevents pronation and supination, an especially important stabilization when dealing with a comminuted Colles' fracture.

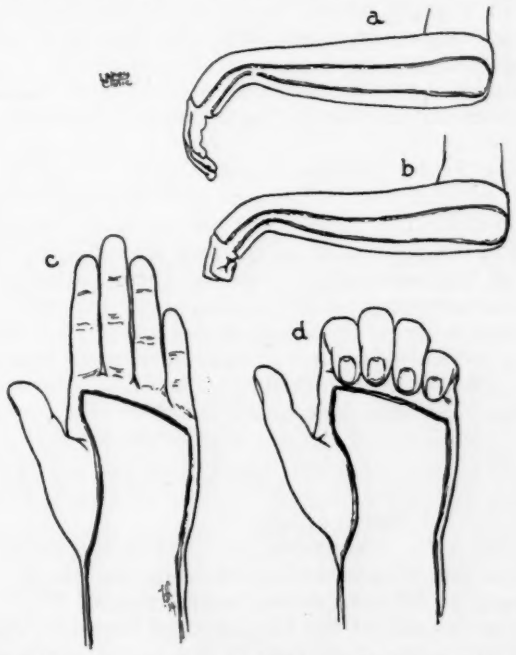

Fig. 6.—To illustrate correct method of application of "sugar tong" plaster splint. Normal range of motion in the interphalangeal and metacarpophalangeal joints; elbow joint from 30 to 40 degrees of flexion-extension; absence of pronation or supination of forearm is essential to prevent displacement of comminuted radial fragments.

Motion of the elbow is not completely limited, as the appliance permits an average total range of from 30 to 40 degrees of flexion-extension of the elbow joints.

In these comminuted fractures in elderly people, still further swelling of the soft parts nearly always occurs after the manipulation and reduction of the fracture.

This is particularly true if some time has elapsed before treatment is instituted. If circulatory interference develops as indicated by the presence of pain and edema of the fingers, the gauze bandage is cut between the two arms of the splint and a fresh bandage put on without disturbing the previous one. Once the swelling begins to subside, the gauze bandage is again cut and, with the splint firmly held by an assistant, another bandage is snugly applied. By these maneuvers the circulation of the hand and forearm is controlled and yet no disturbance results in the alinement of the bone fragments.

Postoperative Course.—After roentgenograms confirm a satisfactory position of the fragments and show the restoration of normal radiocarpal and distal radio-ulnar joint relationship, the patients are instructed first to use the fingers constantly: not only to move the joints actively through their maximum range fifty times daily but at all times to employ the fingers as nearly as possible as in normal daily use; secondly, to abduct the entire arm over the head a minimum of six to eight times a day. The latter exercise prevents loss of shoulder joint function, which is so prone to occur if the arm is held constantly at the side of the body. Impairment of shoulder joint motion is particularly apt to follow Colles' fracture, since falls on the outstretched hand frequently cause trauma to the tendon of the supraspinatus muscle and to the subacromial bursa.

Removal of the Splint.—It is my belief that in these comminuted Colles' fractures the best results are secured by maintaining the original position and splint a minimum of from five to seven weeks. In the group 2 cases the average was six weeks. This is directly contrary to my treatment of uncomplicated Colles' fractures in younger adults, in which the bandage is cut down in from seven to ten days, with the dorsal "tong" sprung open and early massage instituted. In young people, active motion can be allowed in from ten days to two weeks and all splintage removed in from two to three weeks.

In the fifteen patients classified under group 2, the foregoing plan was carried out with the result that in each instance the patient secured union of the fragments in the position in which they were placed at the time of the reduction. None of these patients had flexion contractures of the muscles of the forearm. All presented a range of motion in the finger joints equal to that present before the fracture, and in six instances this range of motion in the fingers had been appreciably increased. In this connection it is believed that, regardless of the degree of arthritic change already present in the interphalangeal joints, fracture of the radius need not and should not be a factor in further progression of this very disabling arthritis.

The decision was reached to splint these patients an average time of six weeks, following the observation that patients did not develop contractures of the flexor group of muscles of the forearm, and because a dorsal tilt of the articular surface of the radius recurred in patients splinted as long as four and in one instance five weeks. The history of the latter individual is particularly instructive (case 1). These data may be compared with those of case 2, in which splinting was maintained for six weeks.

CASE 1.—A woman, aged 70, unmarried, was admitted to the clinic three hours after a heavy fall down steps, striking on the outstretched hand with resulting complete disability of the affected extremity. The extensive comminution later found on manipulation was not evident in the roentgenograms. Reduction was performed and checked under the fluoroscope. Normal anatomic relationship of the radiocarpal and distal radio-ulnar joints and normal alinement of radial fragments resulted. After five weeks, further roentgen study revealed maintenance of reduction and showed evidence of new bone proliferation. The splint was removed and massage and active exercises were instituted. The range of motion at the wrist progressively increased. The patient had no symptoms and in the eight weeks after operation declared that she had a normal hand and wrist joint. Examination revealed volar flexion of the hand to a right angle. Dorsiflexion was 60 degrees (now increased to 90 degrees one year after injury). Radial and ulnar flexions were normal as compared with the noninjured side. Forearm pronation was normal; supination within 10 degrees of normal (still lacks 5 degrees of complete supination). Roentgenograms at this time, however, revealed a partial recurrence of the original deformity, although, fortunately, there was no tilt of the radial articular surface.

Comment.—A good functional, moderate anatomic wrist resulted in the patient, who was poorly muscled and anemic. It is believed that the anatomic result would have been better had the splint been left on from six to seven, instead of five, weeks. Compare with:

CASE 2.—Mrs. M. M., aged 68, a housewife, was admitted to the clinic, Feb. 13, 1934, two hours after a heavy fall on the outstretched right hand. Figure 3 was taken on admission and revealed a comminuted fracture of the radius, with posterior displacement and rotation of the distal fragment. There was dislocation of the radio-ulnar joint. Marked comminution was evident at the time of reduction. Figure 2 shows the arm in the "sugar tong" plaster splint. A check up roentgenogram (fig. 4) was taken May 20, 1935, one year and three months following injury. On clinical examination the patient had normal motion in all directions at the wrist and of the fingers.

When the procedure described was instituted three years ago I [2] was unaware that Platt [3] of Manchester, England, had advised five weeks of immobilization for Colles' fracture with displacement. In other papers consulted the average duration of splintage was from three to three and one-half weeks. It is believed that in the type of case here reported immobilization should average six weeks, but that in younger adults with "displaced" Colles' fracture an average of from three to four weeks in splints is sufficient.

TREATMENT OF DISABLING, OLD, UNREDUCED COLLES' FRACTURE

The comparatively excellent results obtained in these difficult cases through the simple operation described by Darrach,[4] has not been sufficiently recognized. Symptoms are chiefly due to the disturbance in relationship of the distal radio-ulnar joint. A traumatic arthritis develops and with weakness of the wrist causes marked disability. Darrach advises subperiosteal resection of the lower 3 or 4 cm. of ulna. The styloid process is not removed.

I have operated on three such patients admitted to the clinic one year, ten months and eight months, respectively, following fracture. The results were most satisfactory.

SUMMARY

1. Comminuted Colles' fractures are of relatively frequent occurrence in elderly patients. The comminution appears to be due to the presence of brittle avascular bone.

2. Prompt reduction of the fracture is imperative.

3. Reduction should be carried out under general anesthesia, tribrom-ethanol preferred, and then visualized under the fluoroscope.

2. Haggart, G. E.: The Treatment of Comminuted Colles' Fracture in Elderly Patients, New England J. Med. **209**: 1140 (Dec. 7) 1933.
3. Platt, Harry: Colles' Fracture, Brit. M. J. **2**: 288 (Aug. 13) 1932.
4. Darrach, William: Fractures of the Lower Extremity of the Radius, J. A. M. A. **89**: 1683 (Nov. 12) 1927.

4. It is most important that the dorsal tilt of the radial articular surface be corrected and that the normal relationship of the distal radial ulnar joint be reestablished.

5. There are pronounced advantages of the so-called sugar tong (Simpson) plaster splint.

6. Because of the tendency to recurrence of the deformity of the distal end of the radius in these elderly patients, owing to delayed bone repair, it is believed that the extremity should be continuously immobilized in the "sugar tong" plaster splint for a minimum of from five to seven weeks. The splint is adjusted as indicated; unless there originally was marked swelling, this adjustment does not require removal of the splint.

7. Flexion contracture of the hand did not occur in the patients treated by this method.

8. Free finger joint motion is necessary, a range of motion allowed by careful application of the splint. Daily complete arm abduction is of advantage in avoiding limitation of shoulder joint motion.

9. Nonunion of the ulnar styloid, following fracture, was not a significant cause of symptoms.

10. With this procedure, followed by intensive massage, heat and active exercise, a good anatomic and a good functional result was obtained in twelve and in ten patients, respectively, in a group of fifteen (group 2) as compared with five good anatomic and six good functional results in a similar group of fifteen patients (group 1) who were splinted an average of three and a half weeks.

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ABSTRACT OF DISCUSSION

DR. W. BARNETT OWEN, Louisville, Ky.: Comminuted Colles' fractures in old people have been the source of much worry to the surgeon and pain and disability to the patient. All have seen the type of case, following a Colles' fracture, in which loss of function, swelling of the fingers and painful motion of the wrist have occurred. In a very large proportion of cases a deformity has resulted from absorption of the distal fragments of the radius. However, many times, when some deformity of the wrist has resulted, there has been good restoration of function of the hand and arm. Dr. Haggart's conclusion that it is most important that the dorsal tilt of the radial articular surface be corrected and that the normal relationship of the distal radio-ulnar joint be reestablished is one of the most important statements he has made. To produce this situation, it is obvious that the proper reduction of the fracture, primarily, must be accomplished. It has been my custom to place the wrist in palmar flexion after reduction and to apply a dorsal splint of plaster; usually a nonpadded cast is to be preferred. The gripping power of the fingers should not be interfered with. Drop wrist can be easily and safely corrected at the end of about ten days, without disturbing the broken fragments of the radius. Early and frequent inspection and application of heat and light massage are most helpful. The type of anesthetic used to accomplish reduction is a matter of election. I prefer a general anesthetic.

DR. WILLIS C. CAMPBELL, Memphis, Tenn.: I have reviewed forty-five cases of elderly persons with Colles' fracture. This is a terminal fracture and all terminal fractures are delayed to some extent, particularly in old persons. In all fractures of the neck and femur, and even of the external condyle of the humerus in children, nonunion occurs if they are not in perfect apposition. I think that the fluoroscope is a dangerous method and I speak from personal experience. Many of my confrères have suffered afterward. However, roentgenography should be employed in all cases of Colles' fracture during the course of the operation. This can be accomplished by roentgenograms, rapidly developed, and the same results can be obtained. I have not seen any great amount of delay of union in these cases, if reduction was accomplished. I believe that the reason shortening occurs in some of these cases is absorption of the rather atrophic bone afterward. In some of the cases, regardless of what is done, some shortening of the wrist will occur. The flexed position should not be maintained over a long period of time in elderly patients. I apply plaster-of-paris splints next to the skin and have been able to immobilize the fracture quite satisfactorily after reduction. The bad results are due to the fact that Colles' fractures are not given subsequent roentgen study. Roentgenograms should be made at the end of one week. If the fracture is in good position at that time, it will be maintained. I have had a number of fractures that showed some tilting at the end of the week, at which time they could be easily corrected. If this is carried out, the end result will be good. At the end of three weeks another roentgenogram should confirm the position. In elderly persons I remove the posterior portion of the splint and give massage with no motion for six weeks, except in the fingers. In young persons it makes no difference whether or not the splint is removed, because the complications of edema and swelling that occur in adults are lacking and excellent results may be obtained in practically all young persons. The results Dr. Haggart has shown are excellent. I believe that results are not as good in elderly persons as in the young. I know that I have seen some cases of my own at a later time when there has been some shortening of the radius, but on the whole the results are good. Strong traction should be made on the thumb. The reduction is made in the usual manner, but, if strong traction is made on the thumb, many of these radii can be elongated to their normal position and the anatomic landmarks restored.

DR. ROBERT H. KENNEDY, New York: Patients with Colles' fractures are treated by orthopedic surgeons, general surgeons and general practitioners throughout the country. The results are nothing to boast of, whichever group carries out the treatment. The results are comparable to the amount of interest the doctor has in this particular lesion. The public has not learned that many fractures can be treated in such a way that permanent deformity and permanent functional loss are not necessary. Many doctors have the same defeatist attitude. There is no excuse for ever attempting to reduce any Colles' fracture without an anesthetic, unless facilities for it absolutely cannot be obtained within twelve hours. This is not a question of the possibility of obtaining reduction or the ability of the patient to stand pain, but of assurance that no further damage to tissue will be caused by the reduction. I have found the use of local anesthesia quite satisfactory in elderly patients. Too commonly it is stated that at the person's advanced age the result will be good enough without any reduction. A doctor who gives this advice is not granting his patient the advantage of present-day knowledge of treatment. Anything short of a 10 to 15 degree anterior facing of the lower articular surface of the radius means permanent disability and anything short of complete reduction of the dislocation of the inferior radio-ulnar articulation means constant pain on rotation. I do not mean that these replacements can always be obtained, but I do mean that it is inexcusable not to try. I am frequently surprised to find how simple the reduction is in a case I am tempted to sidestep. Even when the patient is seen a week after the fracture occurred, one should not be satisfied without attempting reduction under complete anesthesia. Either doctors must learn to read their roentgenograms or they must insist that roentgenologists give more detailed reports in the instance of Colles' fractures. A typewritten report of "satisfactory reduction" means nothing. I believe that the only satisfactory reduction is 100 per cent perfect, but, as I said, many surgeons believe that no attempt at reduction is satisfactory. Roentgenologists can be as variable in their interpretation of the word satisfactory. I have been given this report many times when analysis of the roentgenogram shows a position that will result in permanent disability and constant pain. The doctor giving treatment should analyze his own roentgenograms, but, if he does not do this, he should employ a roentgenologist who reports on fractures in mathematical terms of angles, axes and apposition. Roentgenologists should not be expected to have as much knowledge of fractures and as much interest in them as physicians. I cannot agree with the general use of the fluoroscope

while reducing Colles' fractures. It entails too much danger to the surgeon who does it frequently.

DR. ROLAND HAMMOND, Providence, R. I.: In treating comminuted Colles' fracture in elderly patients, there are two deformities to overcome: First, one must restore the radial styloid to its proper position, and the ulnar styloid must be brought up. In my experience, unless those fractures are held in absolute position for from a week to ten days, one will have a gradual molding back into deformity. For that reason I have found the sugar tong splint unsatisfactory. I apply a circular plaster bandage from above the elbow to the knuckle joints, but I do more than simply flex the wrist or bring it into ulnar deviation; I put a little twist into it so that the ulnar styloid comes up. That absolutely maintains the radial styloid in position and reduces most of the deformity. The cast should not be left on for more than a week or ten days. At that time it is surprising what amount of firmness has been obtained in the fracture and one may then go to wooden removable splints with the assurance that the fracture will remain in position. The difficulty is reading the roentgenograms afterward with the wrist in this twisted position, but one soon learns to do it.

DR. G. E. HAGGART, Boston: What Drs. Kennedy and Campbell have said is correct. I didn't mean to imply that I reduced them under the fluoroscope all the time. The point they bring out is that the quick-snap roentgenograms will even do away with that. My point is that one should have vision of the fracture immediately following reduction at the time one puts the splint on and then check it with the plate. I feel that in the comminuted type of fracture in elderly patients, if one can prevent pronation and supination, it will help in maintaining the position one secures. The principle of no reduction is decidedly pernicious and any one should have the opportunity of treatment. As to Dr. Hammond's remarks, I am a little unhappy about softened plaster. In this type of splint, one can control it and adjust it to fit the degree of circulatory change much more satisfactorily than with the other splint.

Clinical Notes, Suggestions and New Instruments

SPONTANEOUS INTRAPERITONEAL RUPTURE OF THE NORMAL URINARY BLADDER

ROGER W. BARNES, M.D., AND A. A. STEELE, M.D.,
LOS ANGELES

Rupture of the urinary bladder without trauma and without a predisposing pathologic condition is sufficiently rare to justify the report of a case.

L. F., a man, Spanish, aged 34, entered the hospital the evening of Aug. 3, 1935. About eighteen hours before, while straining to void, he had a sudden severe pain in the lower part of the abdomen, which caused him to faint. He had been playing cards for four hours and had not voided during that time. A high-ball was taken before dinner; otherwise there had been no ingestion of liquor. This was corroborated by others present at the time, as was also his statement of having had no injury. Previous to this his health was excellent, and he had never had any genito-urinary symptoms.

A physician was called, and because of the complete absence of any previous or present genito-urinary symptoms the patient was kept under observation and treated palliatively. Fifteen hours later he felt the desire to void and passed only a small amount of blood. He was immediately sent to the hospital.

The patient was well developed and well nourished. He complained of extreme pain in the lower part of the abdomen. This was found to be rigid and somewhat tender. Three hundred and fifty cubic centimeters of bloody urine was obtained by catheterization. Otherwise the examination was essentially negative.

A roentgenogram of the urinary tract showed a shadow in the region of the lower end of the right ureter, very suggestive of a calculus. A tentative diagnosis of ureteral calculus was made, and cystoscopic examination advised.

A No. 24 cystoscope was passed very easily and the bladder was found to contain numerous large blood clots. When these were evacuated through the cystoscope, the bleeding point was visualized in the dome of the bladder. Closer inspection revealed a ragged tear in the bladder mucosa at this point, and a diagnosis of intraperitoneal rupture of the bladder was made. The bladder was otherwise entirely normal. There was no evidence of obstruction at the bladder neck, no ulceration of the mucosa and no trabeculation. A No. 9 bougie met no obstruction when passed 30 cm. up the right ureter. A cystogram showed the characteristic ill defined outline of the fundus of the bladder, and diffusion of the cystographic fluid throughout the lower part of the abdomen confirmed the diagnosis.

A laparotomy was done immediately, and when the peritoneum was opened a large amount of bloody fluid was found free in the peritoneal cavity. When this was aspirated, a ragged opening into which three fingers could be inserted was found extending from the peritoneal cavity to the bladder, situated just to the right of the midline in the posterosuperior portion of the bladder. No other intraperitoneal injury or abnormality was found. The tear was sutured in two layers with No. 2, forty-day chromic catgut, a stab wound was made through the abdominal wall on the right side, two rubber tissue drains were inserted to the site of the rupture, and the peritoneum was closed. The bladder was then opened extraperitoneally. Its interior was examined and found to be normal except for the tear that had just been sutured. A suprapubic catheter was fastened into place by a purse-string suture, and the abdominal incision was closed.

Following the operation the patient had considerable abdominal distention from intestinal gas, which was fairly well controlled by the Levine tube and gas enemas. Otherwise his convalescence was uneventful, the suprapubic catheter being removed on the ninth postoperative day and a urethral catheter inserted. The suprapubic opening healed rapidly and remained closed after the urethral catheter was removed on the thirteenth postoperative day. He left the hospital in good condition on the fifteenth postoperative day.

Stone,[1] in 1931, reported two cases of so-called spontaneous rupture of the bladder, gave an excellent review of the literature, and summarized the cases reported before that time. He found forty-two cases, in twenty-one of which there was no lesion in the bladder. The probable cause of rupture in these twenty-one cases was as follows: manual expression of placenta, one; during labor, five; attempted micturation during acute retention (cause of retention not given), six; intoxication without trauma (?), three; straining at stool, three; sudden lifting of weight, three.

Since 1931 there have been three cases[2] of so-called spontaneous rupture of the bladder reported: one in a woman with chronic retention and overflow (no cause of retention found), one a tuberculous bladder, and one a subacute retention due to gonococcic urethritis. In each of these, pathologic changes in the bladder or urethra preceded the rupture.

In the case reported there had been no previous genito-urinary symptoms. There was no pathologic condition in the bladder, in the urethra or at the bladder neck, and previous ingestion of liquor had not been sufficient to cause intoxication. No history of trauma could be obtained. It is probable that the distended bladder produced sufficient edema about the bladder neck to cause some obstruction and, when the patient strained to void, the intravesical pressure was sufficient to cause the rupture. This case makes a total of twenty-two cases of spontaneous rupture of a normal bladder that have been reported. Even though it is rare, the condition should be considered in any case presenting the symptom of sudden severe pain in the lower part of the abdomen.

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From the Department of Urology, College of Medical Evangelists.

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2. Alton, B. H.: Spontaneous Intraperitoneal Rupture of a Tuberculous Bladder, New England J. Med. **205**: 1177 (Dec. 17) 1931. Chi, Chang-Ken: Spontaneous Rupture of the Urinary Bladder, Chinese M. J. **46**: 69 (Jan.) 1932. Jones, Arthur: Spontaneous Rupture Intraperitoneally of the Urinary Bladder, New England J. Med. **210**: 1262 (June 14) 1934.

COMPLICATIONS FOLLOWING USE OF SACCHARIN AND ETHER AS A CIRCULATION TIME TEST

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In 1933 soluble saccharin (sodium orthosulphinidbenzoate) was introduced by Fishberg and his associates[1] as a means for measuring the circulation time. A year later Hitzig[2] introduced ether to measure the efficiency of the right heart. The combination of these two methods has been popularly designated as the saccharin-ether test for circulation time. In both of these communications the authors stress the safety and lack of both local and systemic reactions. It is my purpose to report two serious accidents following the use of this test.

TECHNIC

Saccharin Method: Three grams of soluble saccharin is placed in a dry tube and autoclaved for ten minutes; then 3 cc. of sterile triple distilled water is added and the mixture is gently heated until the solution is completed. This is allowed to cool, and 2.5 cc. is injected intravenously through a number 19 gage needle as rapidly as feasible. The time necessary for the saccharin to travel from the site of injection to the tongue is measured. This is called the arm to tongue time and is normally from eight to sixteen seconds.

Ether Method: Two and five-tenths cubic centimeters of a 10 per cent ether in saline solution is injected intravenously and the time interval between the moment of injection and the appearance of ether on the patient's breath is measured.

REPORT OF CASES

CASE 1.—L. B., a white woman, aged 31, was admitted, April 13, 1935, with a diagnosis of acute catarrhal jaundice. Three days later circulation-time studies were done. The arm to lung (ether test) was 6.8 seconds; unfortunately the patient moved her arm during the saccharin test and some of the solution infiltrated the perivascular tissue. She immediately complained of a very sharp pain, and the injection was stopped. The antecubital space showed an infiltration and a dark bluish discoloration. The arm was treated with hot moist dressings and improved clinically in a few days. Though the patient still complained of some pain in her arm she was discharged, April 24. At this time the involved area was tender and covered with a very dark, dry bluish scab. At no time did the patient have any fever. A few days later the infiltrated area became very painful and swollen, with red streaks extending up into the arm and down into the forearm, associated with an axillary lymphadenitis. The temperature ranged from 101 to 103.5 F. The involved area was incised and drained a gelatinous material for ten days. Complete healing took place in about four weeks.

CASE 2.—F. G., a white man, aged 32, was admitted April 17, 1935, with a diagnosis of bronchial asthma. The patient was discharged twelve days later with no improvement in the condition. May 9, on readmission, he complained of a severe asthmatic attack of three days' duration, during which time he had been unable to obtain any relief. The examination of the patient showed a typical asthmatic chest, a right frontal sinusitis, and an eosinophilia of 23 per cent. May 15 it was decided to do circulation-time studies in order to rule out a possible cardiac origin for the asthma, as suggested by Blumgart.[3] Immediately preceding the tests the patient was examined. The lungs revealed typical signs of asthma, the heart sounds were distant, the blood pressure was 100 systolic, 82 diastolic, and the pulse rate 84. The saccharin solution was injected, giving a time of sixteen seconds, which corresponded to the upper limits of normal. The ether solution was now injected, and immediately the patient began to cough and experience great difficulty in breathing. He became markedly cyanotic, the chest was fixed in expiration, and the pulse rate became extremely rapid and thready. The chest revealed barely audible heart sounds and the respiratory murmur was inaudible with occasional dry râles. In spite of all emergency therapy used at the time, such as epinephrine intravenously and intracardially, the patient died. A postmortem examination was not obtained. The ether time in this case was normal.

COMMENT

Because of the simplicity of the test and the ease with which it can be done by every one, I think that a word of warning should be sounded in reference to the possible complications.

In the first case there can be no doubt that the perivascular infiltration of saccharin produced an atypical inflammation that lasted five weeks. The character of the discharge was distinctly different from the usual collection of pus suggesting a chemical type of irritation. It is possible that the jaundice in this case contributed toward the atypical reaction of the tissues. However, in some of the other cases in which infiltration of saccharin took place no deleterious effects were noted.

In discussing the second case very little can be said from a dogmatic point of view. The cause and effect were too closely related to each other to leave any doubt about the part that the test played in the production of this patient's death. I do not think that the test in itself caused the patient's death, but certainly it was the precipitating factor in an already extremely hypersensitive individual. Immediately after this incident the entire batch of materials that had been used was injected into a cat in the physiology laboratory to determine whether any toxic results could be obtained. No abnormal effects resulted.

2021 Grand Concourse.

From the Department of Medicine, New York Homeopathic Medical School and Flower Hospital, service of Dr. P. J. R. Schmahl.

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VISCERA RETAINER

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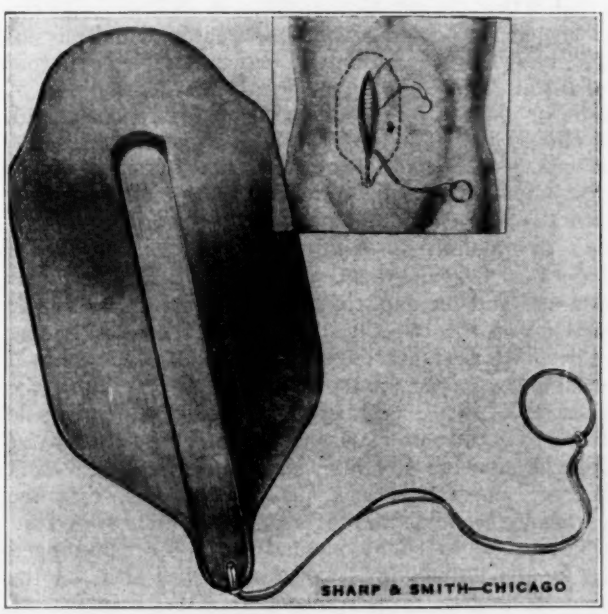
The experience of many surgeons teaches that it is often more difficult to close the abdomen of an obese or muscular patient than it is to perform the preceding steps of the operation. If the patient takes a poor anesthesia and is inclined to strain or breathe irregularly, the difficulties of closure will be increased.

Many ingenious instruments have been devised to help retain the viscera beneath the level of the edges of the peritoneum during the course of parietal closure. If such instruments are to be wide enough to offer any material aid, they are usually awkward to remove when the peritoneum is closed very far. If lap pads are used to retain the omentum and intestine, their extraction is often accomplished with considerable tugging, and the intestine or omental tags are pulled through the opening.



A steel reinforced soft rubber viscera retainer.

The instrument that I have devised and used for some time has the general shape of a sole fish. It is made of soft Para rubber of about 3 mm. thickness and has a central reinforce-

ment of flat steel of about 1.5 mm. thickness, which runs from one end to within 5 cm. of the other. This piece of steel is 2 cm. wide and has an eye in the forward end through which braided silk is passed.

The central stay reinforcement usually is passed beyond each end of the peritoneal opening and the soft rubber sides spread out beneath the peritoneum to prevent the omentum and intestine from escaping. The braided silk cord with a ring attached protrudes through the lower end of the wound. This retainer can be left in the abdomen until the opening is sutured to within 3 cm. of its end, when the braided silk can be used to slip the eye of the retainer into the wound. The soft rubber sides will fold on the central steel reinforcement and permit of easy removal. The moist rubber surfaces will not drag on intestine or omentum. The advantages of the instrument may be summarized as follows:

1. It is easily sterilized.
2. It can be inserted readily and easily removed.
3. It does not scrape the peritoneal surfaces.
4. It efficiently retains omentum and viscera during the difficult periods in the closure of the peritoneum.

30 North Michigan Avenue.

Special Articles

RECENT ADVANCES IN ENDOCRINOLOGY

RELATION TO INTERPRETATION AND UNDERSTANDING OF COMMON SYMPTOMS

CLINICAL LECTURE AT ATLANTIC CITY SESSION

DAVID PRESWICK BARR, M.D.
ST. LOUIS

It requires no wide acquaintance with endocrinology to realize that the practical application of organotherapy has lagged far behind advances in anatomic and physiologic knowledge. Although medication with thyroid and insulin and even with epinephrine and solution of posterior pituitary has been conspicuously successful, the clinical use of more recently discovered substances, such as parathyroid extract, adrenal cortex extract, estrogenic substance and anterior pituitary-like principle from the urine of pregnancy, is restricted and sometimes disappointing. Many preparations, such as the active principle of the corpus luteum, the testicular hormones and the growth, thyrotropic and adrenotropic fractions of the hypophysis, while capable of causing predictable effects in experimental animals, have had for one reason or another limited application in the treatment of disease. If specific therapy were the sole aim of the study of glands of internal secretion, there might be some reason for discouragement on the part of practitioners. It is apparent, however, that the significance of endocrinologic research cannot be measured by this criterion alone and that it must be judged also by the light which investigation has shed on the understanding of disease in general. With increasing knowledge of the hormones, many common symptoms and maladies have acquired new interest. Ideas concerning pathogenesis have been transformed and previously unrecognized interrelationships have been revealed. It is with this aspect of the recent developments in endocrinology that I am concerned here.

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Read before the General Scientific Meeting at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1935.

Needless to say, a thorough survey will not be possible. Already the glands of internal secretion are known to affect the most diverse clinical conditions. Adiposity, hypertrichosis, abnormal pigmentation, hypertension, menstrual disorders, disturbances in carbohydrate metabolism, decalcification of the skeleton and polycythemia are only a few of the pathologic states in which endocrine influences can be demonstrated. From this vast array of possible subjects I have chosen to consider only three and shall limit my discussion to the influence which newer knowledge of the glands of internal secretion has had on the concepts of hypertension, obesity and disturbances in carbohydrate metabolism. The reasons for selecting these particular conditions are, first, that they are extremely common disorders and form a part of the experience of every practitioner; second, they are to some extent interrelated and, lastly, much attention has been given of late to the possibility of their surgical or roentgenologic treatment.

HYPERTENSION

Experience has taught that hypertension must be regarded as a symptom rather than as a disease. The lability and variability of the blood pressure, apparent under physiologic states of exertion and emotion, are more evident in association with pathologic states. It accompanies such different conditions as increased intracranial pressure, thyrotoxicosis, eclampsia and glomerular nephritis. In so-called malignant hypertension the association with arteriolar sclerosis is so early as to suggest the possibility that the high blood pressure is actually caused by primary disease of the blood vessels. While these and other factors are known to contribute to elevated pressure, hypertension is most often encountered in the condition that has been called hyperpiesis, or essential hypertension, a form in which the etiology is almost entirely unknown and in which early correlated anatomic lesions cannot be demonstrated. The realization that essential hypertension tends to be familial and to a certain extent hereditary does not explain its mechanism, and it is in this type of high blood pressure that the hope of demonstrating some relatively simple endocrine factors has long been entertained.

When epinephrine, the pressor substance of the adrenal medulla, was discovered it was immediately supposed, and quite naturally, that clinical disturbances in the level of blood pressure might be explained by its excessive or defective secretion or by an abnormal response of the hypertensive individual to its physiologic effect. The idea was strengthened by the claim, not well substantiated, that the adrenal medulla is hypertrophied in hypertension,[1] and by the disclosure that epinephrine produces hyperglycemia and glycosuria,[2] signs not infrequently encountered in association with clinical hypertension.[3] In spite of this theoretical probability, efforts to prove that the usual case of high blood pressure is dependent on abnormal relations to epinephrine have in general been disappointing.

The detection of the pressor substance in the blood stream offers great difficulties because of its extreme dilution. In the adrenal vein it has been found in

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3. Wiechmann, Ernst: Hypertension und Blutzucker, Deutsches Arch. f. klin. Med. **161**: 92 (Aug.) 1928.

amounts corresponding to not more than one part in 360,000, which indicates that in the general circulation it might reach dilutions of 1 : 100,000,000,[4] an amount so small that present chemical tests are not applicable, and even the extremely delicate physiologic methods are insufficient for quantitative estimations. Under such circumstances reliable comparisons between normal and pathologic individuals are not to be expected, and actual efforts to demonstrate increased amounts of epinephrine in the circulating blood of hypertensive subjects have led to conflicting results.[5] Similarly, efforts to show that patients with high blood pressure are unduly sensitive to epinephrine have been unsuccessful, and there is at present no convincing evidence that the vascular system of such subjects responds abnormally to the pressor substance from the adrenal.[6]

It should be added that many physiologists have been opposed to the view that epinephrine is responsible for the maintenance of normal blood pressure or for the production of continued elevation. Cannon [7] indeed believes that there is no sustained discharge of epinephrine but that it is a part of a supplementary mechanism which becomes active only in emergency.

In spite of such adverse opinion the possibility that excessive amounts of epinephrine produced in the body may cause temporary or even permanent high blood pressure has been established through study of paragangliomas, tumors derived from the chromaffin system and from those cells known to be active in the usual elaboration of epinephrine. In a number of instances such tumors have been accompanied by paroxysmal attacks of excessively high blood pressure.[8] Sudden elevation of systolic pressure from normal to 300 or more with corresponding changes in diastolic have been observed and have been accompanied by colicky pain, anginoid attacks, mydriasis, dyspnea, pallor, glycosuria and hyperglycemia, symptoms which may be seen following the therapeutic injection of epinephrine in sensitive individuals. Analyses have shown that the tumors contain variable and at times extremely large amounts of epinephrine. Kalk,[9] using both chemical and physiologic methods, found from 375 to 500 mg. of the substance in the tumor on which he reported. When it is remembered that the amount of epinephrine which Schmorl [10] found in two normal adrenals was only 4.22 mg., and when it is recalled how small an intravenous dose of epinephrine is necessary to produce a rise in blood pressure, the enormity of such values is readily appreciated. In one case Ernould and Picard [11] believed that they could demonstrate an increased amount of epinephrine in the circulating blood.

While in the early stages of paragangliomas the symptoms and the elevation in blood pressure are paroxysmal, continuance of the cause may result in permanent hypertension, and autopsy may reveal in the kidneys, retinal vessels and elsewhere changes that are scarcely distinguishable from those of essential hypertension.[5a] As is well known, removal of a paraganglioma in the earlier stage of its development may result in establishment of completely normal blood pressure and permanent cure.[12]

Study of these chromaffin tumors does not necessarily lead to the inference that cases of essential hypertension are due to excessive epinephrine. It does demonstrate that a picture clinically and pathologically quite similar may be produced by an excess of epinephrine arising in the chromaffin system of the affected individual.

Paragangliomas are not the only tumors of the adrenals in which elevated blood pressure has been observed. It has also been seen with cortical tumors and with hyperplasia of cortical cells.[13] Clinically many of these tumors have been accompanied by hirsutism, amenorrhea, obesity and other symptoms now recognized as typical of the adrenocortical syndrome. Although in one such case Langeron, Paget and Lohéac [14] found a great increase in the epinephrine content of the tumor tissue, in another only a trace was present. In spite of the fact that lesions have not often been of such a nature as to indicate direct involvement of the medulla, the blood pressure has been consistently elevated. In its character, however, it differs from hypertension associated with paraganglioma. Ordinarily the elevation is not extreme, the systolic pressure varying from 140 to 180, the diastolic from 95 to 120. There are no paroxysmal attacks, and diurnal variations in the blood pressure, while present, are not striking. In several cases the removal of tumors has been accompanied by a fall in blood pressure to normal levels.[15]

The association of high blood pressure with adrenal cortical tumors is of special interest in connection with the recent observation of Cushing [16] on the functions of the basophil cells of the hypophysis. As is now well known, the relatively rare adenomas of the basophil cells of the pituitary have been in a surprising number of instances associated with a syndrome which is almost, if not quite, indistinguishable from that which has been ascribed to adrenal cortical tumors. In addition to the hirsutism, obesity, menstrual disturbances and other features, hypertension of about the same level and character is an almost constant feature.

Cushing has laid great emphasis on reasons for considering that the basophil cells may be in some degree responsible for the hypertension.[17] The logical steps in such reasoning may be outlined. Solution of posterior pituitary, the substance extractable from the posterior lobe, is capable of producing elevation in blood pressure

4. de Wesselow, O. L. V.: Arterial Hypertension, Lancet **2**: 636 (Sept. 22) 1934.

5. (*a*) Kuré, K.; Nakaya, T.; Murakami, S., and Okinaka, S.: Hyperadrenalinämie bei essentieller Hypertonie und ihre Behandlung durch Atropin, Klin. Wchnschr. **12**: 454 (March 25) 1933. (*b*) Brandt, F., and Katz, G.: Ueber den Nachweis von Adrenalinsekretion beim Menschen, Ztschr. f. klin. Med. **123**: 23, 1933. de Wesselow.[4]

6. Kylin, Eskil: Die Hypertoniekrankheiten, ed. 2, Berlin, Julius Springer, 1930.

7. Cannon, W. B.: Studies on the Conditions of Activity in Endocrine Organs: XXVII. Evidence That Medulliadrenal Secretion Is Not Continuous, Am. J. Physiol. **98**: 447 (Oct.) 1931.

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9. Kalk, H.: Paroxysmale Hypertension, Klin. Wchnschr. **13**: 613 (April 28) 1934.

10. Schmorl, quoted by Kalk.[9]

11. Ernould, H., and Picard, E.: Un cas de sympathome sympathogonique avec hypertension artérielle paroxystique, Rev. belge sc. méd. **6**: 223 (March) 1934.

12. Coller, Field and Durant.[8] Pincoffs.[8] Bauer, J., and Leriche, R.: Zur Klinik und Therapie des Paraganglioms Adrenalogene; Hochdruckkrisen, Wien. klin Wchnschr. **47**: 1224 (Oct. 12) 1934.

13. Walters, Waltman; Wilder, R. M., and Kepler, E. J.: Suprarenal Cortical Syndrome with Presentation of Ten Cases, Ann. Surg. **100**: 670 (Oct.) 1934.

14. Langeron, L.; Paget, M., and Lohéac, P.: Dosage de l'adrénaline dans trois cas de tumeurs surrénales: Rapports avec la structure histologique de la tumeur et la tension artérielle du malade, Compt. rend. Soc. de biol. **100**: 873 (April 8) 1929.

15. Walters, Wilder and Kepler.[13] Murray, C. G., and Simpson, G. S.: A Case of Virilism Due to an Adrenal Cortical Hypernephroma, Lancet **2**: 745 (Oct. 8) 1927.

16. Cushing, Harvey: The Basophil Adenomas of the Pituitary Body and Their Clinical Manifestations (Pituitary Basophilism), Bull. Johns Hopkins Hosp. **50**: 137 (March) 1932.

17. Cushing, Harvey: Hyperactivation of the Neurohypophysis as the Pathological Basis of Eclampsia and Other Hypertensive States, Am. J. Path. **10**: 145 (March) 1934.

somewhat less dramatic but considerably more prolonged than that following epinephrine. Although this substance is stored in the posterior lobe and can be extracted from it, there is much reason for the belief that it is not formed in the cells of the nervous tissue constituting the substance of the posterior portion of the hypophysis. It seems more likely that it is a secretion of the cells of the pars intermedia which are basophilic in their staining reaction and are distinguishable with difficulty from the basophil cells of the anterior lobe and from those found in basophilic adenoma. Such cells are not always confined to the pars intermedia but may wander out into the posterior lobe, where they are seen as collections of cells still receptive to the basic dyes. Cushing emphasized the increased invasion of the posterior lobe by such cells in hypertensive and in eclamptic individuals and has suggested that both the proliferation of cells and the invasion of the posterior lobe may be significant in the etiology of elevated blood pressure. This fascinating hypothesis has stimulated much thought and work but is still open to question. Study of a larger number of hypophyses by many observers has led to the impression that the number of basophilic cells increases with the age of the individual, that they are greater in number in hypersthenic than in asthenic individuals, thus in general tending to show predilection for the type of patient statistically most likely to have high blood pressure, and that they tend to accumulate to a greater extent in the posterior lobe in hypertensive individuals.[18] It has also become evident, however, that such cells may not be demonstrable in some cases with excessively high pressure and may on the contrary be seen in young individuals whose blood pressure has been normal.[19]

The trend of recent work has supported the contention that anatomic lesions of both the adrenals and the pituitary may be coincident with and possibly responsible for considerable changes in blood pressure and that the associated lesions are not limited to the medulla of the adrenal, the supposed source of epinephrine, or to the posterior hypophysis, where the active substance, solution of posterior pituitary, is stored, but that they may also occur in the adrenal cortex and in the basophil cells of the anterior hypophysis. While it by no means follows that ordinary cases of hypertension are dependent on similar changes, the possibility of adrenal and hypophyseal participation is established.

OBESITY

Less perhaps can be said of the effect of recent endocrine developments on our understanding of obesity. Clinical and laboratory experience has demonstrated that although such factors as lack of exercise and excessive consumption of food are of great importance in the production of adiposity, they are not sufficient to permit great fat accumulation in all individuals. That excessive obesity is familial and to a certain extent hereditary does not explain the mechanism of fat deposition. For many years there has been an effort to attribute excessive obesity, whether familial or otherwise, to endocrine dysfunction. Classification has usually been attempted on the basis of the distribution of fat, which varies widely in obese subjects. Emphasis has been placed on the occurrence of excessive trochanteric fat as an expression of hypogonadism, and of fat accumulation in the supraclavicular regions and about the wrists and ankles as evidence of lowered thyroid function. Subcutaneous deposits about the hips, thighs, the mons and the lower part of the abdomen, the so-called girdle obesity, has been considered as evidence of pituitary insufficiency.[20] Although interest in these classifications has not lessened, it is now recognized that some of the conclusions were in part premature. Even the conception of hypophyseal obesity has undergone considerable change. The basis for attributing girdle obesity to pituitary insufficiency arose from the study of Froehlich's syndrome. Froehlich's original case was attributed to a pituitary tumor,[21] and apparent confirmation of such an association was obtained from many reports of similar symptoms developing in patients who suffered from pituitary lesions. As other cases of the adipose genital syndrome accumulated, however, it became evident that the same clinical picture could arise with extrasellar tumors and that it was not unusual to see cases in which the hypophysis was entirely uninvolved.[22] More commonly lesions are found in the region of the hypothalamus, and, even in those cases in which the hypophysis is primarily affected, pressure or invasion of the hypothalamus is excluded with difficulty.

In experiments with rats, Philip Smith[23] was able to show that complete removal of the hypophysis without injury to the adjoining nervous tissue caused no adiposity. On the other hand, chemical damage to the hypothalamus with no injury to the hypophysis resulted in marked accumulation of fat. While these beautiful observations of Smith are usually considered decisive in disproving the primary importance of the pituitary gland in the causation of the Froehlich type of obesity, they have not discouraged the effort to associate the distribution of fat with endocrine disorders.

Cushing's study of the clinical symptoms accompanying basophil tumors of the hypophysis has emphasized the so-called buffalo type of obesity, a distribution characterized by accumulation of fat on the face, neck and trunk, with relative slenderness of both arms and legs. It is often accompanied by the appearance of large red striae on the abdomen and on the upper portion of the thighs and is not infrequently painful.[16] It has also been seen in typical form in the presence of adrenocortical tumors.[13]

While this curious and characteristic distribution of fat is perhaps the most convincing evidence of endocrine influence thus far available, it is not yet clear whether the picture is to be ascribed primarily to pituitary or to adrenal influence. The recent experiments of Thompson and Cushing[24] are of great interest. Because of the supposed relationship between the basophil cells and the sex stimulating hormones of the hypophysis, they conceived the idea that the long continued injection of active gonadotropic hormones into young animals might produce some of the symp-

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19. Smith, M., and Kunkel, P.: Personal communication to the author.

20. Engelbach, William: Endocrine Medicine, Springfield, Ill., Charles C. Thomas, 1932.

21. Froehlich, A.: Wien. klin. Rundschau **15:** 883, 1901. Major, R. H.: Classic Descriptions of Disease, Springfield, Ill., Charles C. Thomas, 1932, p. 269.

22. Borchardt, L.: Ueber zerebrohypophysäre Fettsucht Endokrinologie **10:** 250, 1932. Maislisch, R. M.: Zur Pathogenese der adiposo-genital Dystrophie, Arch. f. Psychiat. **99:** 34, 1933.

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toms observed with basophilic tumors. The injected animals were retarded in skeletal development and became both adipose and plethoric.

DISTURBANCES IN CARBOHYDRATE METABOLISM

With the discovery of insulin and the demonstration of the rôle played by the islands of Langerhans in its production, the view previously held that diabetes is dependent on disease of the pancreas was apparently confirmed. The nature of diabetes could be redefined as a condition dependent on disease involving the islands of Langerhans and on the deprivation of insulin.[25]

Although this view has been widely accepted, it does not explain with entire satisfaction some clinical and experimental observations. Pathologic studies of the pancreas in ordinary diabetes have failed to demonstrate constant lesions. In his study of the pancreas in nondiabetic patients, Warren [26] showed that practically any lesion found in the pancreas of diabetic patients could be duplicated in nondiabetic patients and concluded that it was impossible to diagnose the presence or absence of diabetes from a study of the pancreas. Even in cases in which death has resulted from the severity of the diabetes the islands of Langerhans may deviate but little from the normal, and it would appear that the anatomic mechanism for the production of insulin is well preserved.

Another difficulty has arisen from the study of insulin resistance and insulin sensitivity. Even in the early days of the use of insulin cases were encountered in which unusually large doses were required. Time has added a great number, and it is now recognized that in the presence of infection, in some cases of hyperthyroidism,[27] in hemochromatosis,[28] in hepatic disorders and in the presence of some forms of pituitary disease [29] the effectiveness of a given dose of insulin may be greatly decreased.[30] Such insulin resistant cases have also been encountered in the absence of these obvious factors. Other cases have shown an abnormal sensitiveness to insulin in that slight excess of the dosage required to control the diabetic condition produces hypoglycemia and its accompanying symptoms. It has been shown that the amount of insulin necessary to cause a fall in blood sugar varies widely both in diabetic and in nondiabetic patients. Doses of 0.001 unit per kilogram have been sufficient in some cases, while in others as much as 0.5 unit per kilogram was necessary.[31] Such observations clearly indicate that there is no definite or constant relationship between the amount of insulin and the amount of carbohydrate which it will cause to be utilized. They suggest that there might be some contraregulatory mechanism capable of neutralizing the effect of insulin.

Recent work has thrown much light on this possibility and has indicated that both the pituitary and the adrenals are concerned with the activity of insulin and with the severity or mildness of diabetes.

Glycosuria is a symptom in about 25 per cent of the cases of acromegaly.[32] One half of the cases of basophilic tumors of the hypophysis have exhibited diabetes. On the other hand, certain cases of lowered pituitary function, such as Simmonds' disease, have shown a high tolerance for carbohydrate and at the same time an extraordinary sensitiveness to insulin.[33]

The experiments of Houssay,[34] which were repeated by Barnes and others,[35] have been of crucial importance. It was found that hypophysectomy in animals from which the pancreas had been completely removed lessened the degree of glycosuria and hyperglycemia and at the same time induced a state of sensitiveness to insulin so great that the administration of one unit might be sufficient to produce hypoglycemic convulsions. In Barnes's dog no spontaneous glycosuria appeared during many weeks of observation, a high sugar tolerance being the only evidence of the loss of pancreas and of the diabetic state. On the other hand, injections of extracts of pituitary, containing the so-called diabetogenic principle, produced glycosuria. In Long's depancreatized and hypophysectomized cats, such extracts were capable of causing excessive glycosuria, hyperglycemia, ketosis, coma and death.

A conclusion drawn from such experiments has been that the pituitary contains a principle which lessens the effectiveness of insulin and that the absence of this principle following hypophysectomy renders the animal sensitive even to very small amounts of the pancreatic substance.

Still more informing are the recent experiments of Long [36] and his collaborators. After overcoming enormous technical difficulties they are now able to prepare cats from which both the pancreas and the two adrenals have been removed. With minor variations the effect is the same as in the Houssay dogs. There is marked lessening of the severity of the diabetes and, if an active suprarenal cortical extract is given, a great prolongation of life. One important difference has been noted between Houssay's dogs and Long's cats. The adrenalectomized and depancreatized animal does not respond even to large doses of a pituitary extract that causes fatal ketosis in the hypophysectomized and pancreatectomized animals.

The natural conclusion to draw from these experiments is that action of the anterior pituitary substance is possible only through the mediation of the adrenals. Removal either of the pituitary or of the adrenal glands will lessen the severity of the diabetes and produce sensitiveness to insulin. The protection against pancreatectomy is removed by injection of solution of pituitary when the adrenals are present but is not altered when they have been removed.

One surprising outcome of Long's work is that adrenal cortex extract, the active principle of the

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adrenal cortex, while capable of prolonging the life of the adrenalectomized animals and of protecting them from the usual concomitants of adrenal insufficiency, will not confer on them the power of reacting to the pituitary principle.

One other result of Long's important experiment should be noted. It is well recognized that epinephrine, the product of adrenal development, acts as an antagonist to insulin. Simultaneous injections of epinephrine and insulin show opposite effects on the level of blood sugar. It would therefore be a reasonable inference that the increased sensitivity to insulin and other effects which are seen to follow adrenalectomy might be attributed to the absence or diminution of epinephrine. Long's experiments indicate that this is not the correct explanation. Animals from which one entire adrenal and the medulla of the other have been removed are not protected against pancreatectomy or the hyperglycemia and ketosis that follow. Apparently this is strong evidence that the cortex of the adrenal is an active factor in carbohydrate metabolism.[37]

From such observations it is clear that disease of the pancreas is not the only influence in the clinical conditions of diabetes and hyperinsulinism. Experimental evidence indicates a possible mechanism by which clinical cases of insulin sensitivity and resistance might be explained. It appears that a state closely simulating clinical diabetes or the opposite condition of hyperinsulinism might arise from factors other than disease of the pancreas and might be attributed either to abnormal resistance or to abnormal sensitivity to the product of the pancreatic islets.

THE OCCURRENCE OF ANATOMIC AND FUNCTIONAL DISEASE

All the conditions that have been discussed may accompany and, under some circumstances, seem to be at least in part dependent on organic disease of the pituitary or of the adrenals. Hypertension may be a feature of pituitary basophil tumors, of cortical tumors of the adrenal and in its paroxysmal form of paragangliomas of the medulla. The buffalo type of obesity is encountered with both basophil and adrenal tumors. Diabetes and even more often hyperglycemia and demonstrable disturbances in carbohydrate storage are accompaniments both of acromegaly and of Cushing's disease and have also been reported with adrenocortical tumors. Hypoglycemia has been seen in association with destruction of the hypophysis, and insulin sensitiveness characterizes pituitary cachexia and hypophysectomy. That these common conditions may be associated with anatomic endocrine disease has thus been conclusively demonstrated. The fact remains, however, that the great majority of cases of hypertension, obesity, diabetes and hypoglycemia display no clinical evidence either of pituitary or of adrenal disease. It might be claimed, therefore, that although the exceptional case may be ascribable to endocrine factors, the usual picture has nothing to do with them. Before accepting such a contention as final it is important to consider some of the factors involved. Clinically the means of recognizing pituitary and adrenal disease are extremely crude. Roentgen examinations of the skull, study of the visual fields, the search for neighborhood symptoms, and roentgenograms of the upper part of the abdomen are feeble diagnostic methods for determining even gross anatomic defects. More and more evidence is accumulating that for overfunctioning of a gland of internal secretion a tumor is not necessary. In the thyroid,[38] parathyroid[39] and pancreas[40] it has been repeatedly demonstrated that hyperplasia not always grossly perceptible may produce symptoms referable to oversecretion. Already this is apparent in the studies that have been made in regard to the adrenal and is suspected from studies of the pituitary. Furthermore, it must be remembered that the condition of no gland is static and that some and presumably all are constantly adapting themselves to changing conditions of internal and external environment. Recent studies of the thyroid gland have shown how labile it is from an anatomic standpoint and how easily it is affected by a great number of different circumstances.[39] One of the best examples of anatomic and physiologic adaptation is encountered in the study of interrelations between the hypophysis and the ovaries. At puberty, during the menstrual cycles, during pregnancy and lactation, and at the menopause these organs are undergoing constant changes which are morphologically recognizable and which have been established more recently by functional and hormone studies.[41] In these relationships, moreover, temporary imbalance is demonstrable and not infrequent. Disturbances in the amount or in the timing of anatomic and functional changes may lead to clinical disease such as the anovulatory type of menstruation, to amenorrhea, to the complicated symptomatology of the menopause, or to delayed lactation. The time is past, therefore, when the participation of glands of internal secretion in pictures of disease can be judged solely by demonstrable anatomic changes. The possibility cannot be denied that the pituitary, the adrenals and perhaps other glands as well are involved not only in the rare case presenting a demonstrable tumor but in all cases of essential hypertension, upper body obesity and diabetes.

The clinical recognition of pituitary basophilism or of the adrenocortical syndrome does not depend on any single manifestation but on a combination of symptoms: hypertrichosis, amenorrhea, obesity of the upper body type, high blood pressure, disturbances in carbohydrate metabolism, sometimes decalcification of the skeleton and polycythemia. With our present experience such an association of symptoms in advanced form would appear to be unmistakable evidence of adrenal or of pituitary disease or of both. Such an assumption has in many instances led to the demonstration of a tumor or of significant hyperplasia and in some cases has resulted in surgical removal and dramatic cure. The symptoms themselves are among those most frequently encountered in clinical medicine. Moreover, they are often seen together in the same individual. Common associations are hirsutism, particularly of the face and chin, in plethoric obese women, obesity accompanied by long periods of amenorrhea, the diabetes of bearded women, obesity with hypertension, obesity accompanied

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by a prediabetic state or by frank diabetes, and finally obesity with both hypertension and hyperglycemia.

With the consideration of such pictures of disease, the practical aspect of the subject under discussion in this paper becomes apparent. There seems to be no sharp dividing line between the obvious adrenal and pituitary syndromes and those which reveal combinations of two or more of the characteristic symptoms. For any physician who has permitted himself to become fully aware of the recent advances in pituitary and adrenal physiology, the temptation is great to consider all these conditions in the same category and to adopt for the mild cases the same therapeutic approach that has proved successful in the more advanced.

The importance of establishing criteria by which a separation can be made is indicated by the emphasis recently given to various surgical and radiologic procedures suggested for the treatment of these conditions. Irradiation of the pituitary region has been suggested not only for the control of pituitary basophilism [16] but also for hypertension.[42] Subtotal adrenalectomy has been advocated in the treatment of hypertension.[43] Denervation of the adrenals,[44] section of splanchnic nerves and section of the anterior roots of spinal nerves,[45] although based on somewhat different conceptions, have as part of their rationale the hope of controlling excessive adrenal activity.

The fundamental soundness of considering ordinary cases of hypertension, obesity and diabetes as possibly related to disturbed pituitary and adrenal function should not blind one to the fact that this is as yet only a hypothesis dependent for its validity in large part on analogy and circumstantial evidence. It must not be forgotten that the present surgical and roentgenologic approach in therapy is experimental and accompanied by no small dangers. To proceed wisely in such a situation requires sound knowledge of existing facts, caution and conservatism in the clinical application of laboratory evidence and perhaps, above all, a mind open and prepared for the advances that will doubtless be made in the next few years.

SUMMARY

Advances in the study of glands of internal secretion cannot be judged solely or chiefly by the extent to which they lead to successful organotherapy but more by the profound influence they have on the understanding and interpretation of common symptoms. Consideration of their relation to hypertension, obesity and disturbances in carbohydrate metabolism is of especial importance because of the frequency of such manifestations, because they are often encountered in the same individual and because in certain striking instances they are directly attributable to pathologic changes in the hypophysis or the adrenals. Although participation of these and other glands of internal secretion must be suspected in many cases of high blood pressure, obesity and diabetes, caution is necessary lest the newer knowledge be applied prematurely and too extensively in surgical and radiologic treatment.

600 South Kingshighway.

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NONSPECIFIC PROTEINS

A NUMBER OF FIRMS ARE ADVERTISING NONSPECIFIC PROTEIN PREPARATIONS UNDER PROPRIETARY AND SOMETIMES MEANINGLESS NAMES. RELATIVELY FEW OF THESE PREPARATIONS HAVE BEEN SUBMITTED TO THE COUNCIL ON PHARMACY AND CHEMISTRY AND NO PROPRIETARY NONSPECIFIC PROTEIN PREPARATION HAS BEEN ACCEPTED FOR INCLUSION IN NEW AND NONOFFICIAL REMEDIES. BELIEVING THAT PHYSICIANS DESIRE A MORE EXTENSIVE PRESENTATION OF INFORMATION CONCERNING NONSPECIFIC PROTEIN PREPARATIONS, THE COUNCIL ON PHARMACY AND CHEMISTRY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REVIEW. IN ADOPTING THIS REPORT, THE COUNCIL EXPRESSES APPRECIATION TO THE AUTHORS OF THESE ARTICLES, DRS. RUSSELL L. CECIL AND LUDVIG HEKTOEN.

PAUL NICHOLAS LEECH, Secretary.

THE REACTIONS TO THE NONSPECIFIC PROTEIN TREATMENT OF INFECTIOUS DISEASES

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The writings about the effects of nonspecific protein treatment, therapeutic and otherwise, have been reviewed by others [1] and are considered in the article by Cecil, which follows. Hence this literature will not be considered in detail here. As used in this article the term nonspecific protein refers to proteins of different antigenic and other properties than the microbes concerned in the diseases subjected to the treatment.

The usual obvious effects of the intravenous injection of foreign proteins of any kind are chill, fever, headache, and gastro-intestinal and other disturbances. These effects are dependent on and associated with humoral and cellular changes of complex nature. In its typical form the protein reaction reaches its height a few hours after the injection, and in infectious states the subsidence of the reaction may be followed by clinical improvement. The benefit seems to bear some relation to the general reaction and fever; the higher the fever, the better may be the results. Depending on the kind and on the quantity of protein injected as well as on the patient and his disease, the effects of such injections are subject to much variation. Whether there are any true qualitative differences in the reactions under different conditions has not been determined. The acute protein reaction resembles the immediate reactive response to acute infection in which foreign proteins enter the body in the form of infectious microbes.

Can the acute protein reaction and its results be explained by the operations of some single, central mechanism? At present the nearest we can come to any explanation seems to be to assume that as the foreign proteins mix with the fluids of the body and are taken up by cells, especially in the reticuloendothelial system, humoral and intracellular processes result, the products of which affect the entire organism in a characteristic but complex fashion. The ensuing phenomena are partly evanescent, partly more or less permanent. Weichardt has advanced the view that these phenomena are the expression of a general stimulation of cellular activities. Certain phases of the protein reaction may be considered briefly.

A prompt but evanescent effect is exercised on the autonomic or sympathetic nervous system. In the

From the John McCormick Institute for Infectious Diseases.

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splanchnic area vascular dilatation associated with secretory stimulations develops at the same time as peripheral vessels are contracted; hence the chill. Before long this action on the vessels is reversed and then comes the reestablishment of the normal state. The substance or substances that cause these vascular phenomena have not been determined. The fever indicates a simultaneous increase in chemical activities. At first there develops a peripheral leukopenia, which is succeeded by leukocytosis as the acute reaction subsides. Whether the leukocytes now have a greater phagocytic power than normally does not seem to have been determined, but generally leukocytosis is regarded as an anti-infectious reaction. Of other changes in the blood may be mentioned increase in proteolytic and lipolytic enzymes, diminution and then increase in fibrinogen and complement, lessening in the colloidal stability of the plasma, and increase in nonprotein nitrogen.

The capillary walls and the reticulo-endothelial system are believed to be the sites of important processes in nonspecific treatment. A temporary increase in phagocytic activity and in permeability is assumed. Local edema results and substances accumulate that may destroy bacteria and toxic substances. It is probable that the products of the breakdown of free and ingested foreign proteins and other substances may have marked local and general effects. Substances with vasodilator actions, such as histamine and choline, as well as products with other effects may be liberated from the tissues. Histamine causes vascular reactions like those that result from injury to tissues. The focal reactions in nonspecific protein treatment may depend more or less on such processes.

Intravenous injection of foreign proteins may give rise to acute reactions in existing inflammatory areas, especially those of infectious origin. Such reactions may develop in localizations of the particular infection under treatment as well as in other processes even when unsuspected and latent. These focal reactions indicate that inflammatory tissues are sensitive to the effects of the protein injection. The vessels may be more or less dilated beforehand; reticulo-endothelial and other cells may be abnormally active and even specifically sensitive or allergic. The conditions for rapid diffusions and consequent interactions are favorable. These focal reactions may be interpreted as the outcome of nonspecific and of specific (allergic) processes. The local result may be healing with or without disintegration of tissue. In acute reactions in infectious foci, antigenic substances may be liberated to stimulate the production of antibodies and other specific anti-infectious processes. Rarely the flare-ups may result in untoward complications of protein treatment. Hench [2] has described an instructive series of cases of this nature, including such conditions as appendicitis, cholecystitis, iritis and pericarditis.

Whether the normal antibodies and other microbicidal substances in the blood are increased in nonspecific protein treatment has not been determined. From the results of experiments on animals it has been inferred that in infectious conditions nonspecific proteins may stimulate renewed formation of specific antibodies, but here again no positive statements are warranted because adequate observations on patients in the course of treatment do not seem to have been made.

This statement is true even of typhoid, which has yielded the most striking results of the acute infectious diseases subjected to intravenous protein injections, specific as well as nonspecific. It is said that one third of patients with typhoid so treated recover by crisis, that one third are improved, and that in one third the treatment is without apparent curative effect. No complete explanation can be offered for these differences in results. As the main localizations of typhoid are in the splanchnic lymphatic apparatus, they are involved directly in the reactions following the protein injection; but whether the curative effects are caused by the sudden stimulation of specific antityphoidal processes, by increase in enzyme actions, by the activities of new leukocytes or by combinations of these processes are questions one cannot answer. Detailed observations are needed on patients under different forms of protein treatment. It has not been determined whether the treatment of typhoid with nonspecific proteins gives the same results as treatment with specific proteins; that is, vaccines of typhoid bacilli or of closely related bacteria. Neither has it been determined whether there is more production of specific antibodies on the injection of specific than on the injection of nonspecific proteins in typhoid.

The nonspecific proteins—serum, milk, vaccines—used in treatment are in themselves antigenic and may call forth homologous or specific antibodies, which however would not be expected to exercise any therapeutic effect as such under the conditions in hand. But, as stated before, the injection of new antigen may stimulate renewed production of antibodies against the antigen or antigens of previous immunizations. This is the so-called anamnestic reaction—the previous process is recalled into action. This phenomenon shows that immunization has a lasting effect on the organism. It seems as if antigen enters and remains in the cells in which antibodies are synthesized. Probably the first to point this out were Salmonsen and Madsen [3] in their studies of the reproduction of diphtheria antitoxin after large losses of blood. They said that this reproduction results from the acquirement by certain cells of a new and lasting secretory power under the influence of the toxin. It should be remembered then that the therapeutic use of protein may give rise to more or less permanent sensitizations, that the effects of antigenic proteins are more permanent than the effects of pharmacologic agents, and that the body can produce many different antibodies—carry many different sensitizations—at the same time.

There is no evidence that nonantigenic substances can initiate de novo the production of antibodies, but in animal experiments it has been found that certain nonantigenic substances (e.g., pilocarpine, metallic salts) may increase the concentration of antibodies in the blood in the early stages of formation as well as induce secondary rises after the apex of the antibody curve in the blood has been passed. It is perhaps doubtful whether these effects are due to stimulation of production or to mobilization of existing antibodies. In the acute protein reaction, substances may arise which can act like pilocarpine in animal immunization.

In view of all the possibilities referred to in the foregoing, it seems fully warranted to interpret the effects of nonspecific proteins in infectious diseases as the results of the activation of nonspecific as well as specific anti-infectious processes. Much further study, especially of the changes in the human body, is needed

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3. Salmonsen, C. J., and Madsen, T.: Om Gendannelse af antitoxisk Substans efter store Blodudtömmelser, Kgl. Danske Videnskabernes Selskabs Forhandlinger, 1898, p. 227.

to give a clearer insight into the intimate nature of these processes as they occur under various conditions. There can be no doubt that the scope and nature of the reactions to injected proteins in infectious states depend in large measure on the circumstance that the tissues of the patients have been stimulated and sensitized by infectious and antigenic substances. So far but little advantage has been taken of the opportunities to make careful and detailed studies on patients in the course of treatment. To understand better the reactions to different nonspecific proteins in infections, analysis is needed also of the effects caused by such proteins in apparent good general health. And comprehensive observations are indicated on animal diseases that correspond as much as possible to the human diseases subjected to nonspecific protein treatment.

Therapeutics

THE THERAPEUTICS OF THE COOK COUNTY HOSPITAL

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CHICAGO

NOTE.—*In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The articles will be continued from time to time in these columns. When completed, the series will be published in book form.*—ED.

THE THERAPY OF INJURIES TO LARGE BLOOD VESSELS

IN COLLABORATION WITH DR. RAYMOND W. MCNEALY

In injuries involving the large vessels, dramatic onset and rapid development of the clinical climax which places the patient's life or limb in jeopardy demands immediate, decisive and correct treatment. The indications are: hemostasis, care of complicating injuries, maintenance of life, maintenance of distal circulation and appropriate after-care.

HEMOSTASIS

Temporary Hemostasis.—(*a*) Constriction of Limb Above the Wound (Esmarch Bandage): When a wound is bleeding in jets, pressure should be applied above, not to the wound itself. Immediate help should be rendered in these emergencies, at the scene of the accident, by some one who at once with both hands grasps and squeezes the entire circumference of the limb while some one else ties any available thick cord or other fabric around the limb, slips any available rod under the knot, and by means of the rod twists the knot until the bleeding is checked. When any foreign body of considerable size has been driven into a wound, this body should be left in place as its forcible removal may start a fatal hemorrhage. Indeed, the rule should be given the public: "Do not touch the wound." A general knowledge of these two principles might save many a life.

The surgeon performs essentially the same service by compressing the principal artery of the limb above the wound at the point of election and then applying a tourniquet. Esmarch long ago emphasized certain principles in the application of tourniquets which should be kept in mind: 1. Elevation of the extremity before application assists in hemostasis. 2. The tourniquet should never be applied to the lower part of the leg or to the forearm, because the blood vessels escape compression between the two bones of the part. 3. The tourniquet should be applied to the adductor side first, to secure immediate arterial occlusion without marked venous congestion. 4. Caution must be exercised to prevent sudden flexion or extension of the limb after the viselike constricting tourniquet has been applied. 5. The tourniquet should not be applied in successive overlying loops, because each loop then exaggerates the constriction of the preceding one. An interval should be allowed between the loops. 6. The tourniquet should not be left on any longer than is absolutely necessary.

The most common error in putting on a tourniquet is applying it with force less than that of the systolic blood pressure. This permits serious congestion distally and aggravates the bleeding. A frequent cause for this error is that the tourniquet is applied while the patient is in shock and when only a light constriction suffices to stop the bleeding. In the first reaction after shock the systolic pressure rises above that of the constricting tourniquet, which then becomes actually detrimental in the control of hemorrhage. Some reservation must be made in both the force and the duration of application of the tourniquet in individuals with diseased arteries. Inordinate pressure may rupture the intima of sclerotic arteries and result in local thrombosis. Prolonged constriction of these vessels may also lead to distal thrombosis, with similar disastrous consequences to the limb.

(*b*) Direct Aseptic Compression (Tamponade): This is an additional recourse available to the surgeon, which becomes especially important in locations that do not admit of the application of a tourniquet, such as the neck, the trunk and the immediate roots of the limbs.

A series of ingenious methods of arterial control has been developed. In each location, surgeons have taken full advantage of local anatomic conditions to devise easier and more reliable methods of controlling hemorrhage. These include such maneuvers as the intercostal plug in intercostal hemorrhage, pneumothorax in wounds of the pulmonary vessels, the rectal tampon and the spring and elastic compressors. Full advantage is also taken of all direct compressions, especially those which utilize adjacent bony prominences against which the compression can be made, and of the assistance which simple elevation renders.

Concealed hemorrhage, in the absence of profuse external hemorrhage, may be of sufficient severity even to endanger life. The gravity of hemothorax or hemoperitoneum is apparent, but the dangers attending interstitial hemorrhages are not sufficiently appreciated. Large quantities of blood plasma may be lost from the physiologic circuit into the loose tissues of the groin or the axilla, without blood leaving the body. A serious isolation of formed elements from the blood stream occurs in interstitial hemorrhages accompanying injuries to large vessels. The fluid elements are quickly absorbed, leaving more space for packing and concentration of formed elements. An interstitial hematoma of 1 liter may actually represent a blood loss of 2 liters. These situations demand intervention with almost as much urgency as does profuse external

hemorrhage. These local interstitial losses of blood can usually be stopped by direct compression or by tourniquet application, if the site is suitable, in exactly the same manner as is profuse external hemorrhage.

In many cases the external hemorrhage is quickly and easily controlled or the hemorrhage, if concealed, checked in extent before there is any primary dangerous loss of blood. These cases must not be dropped from careful observation, because in some the improvement of circulatory activity precipitates recurrent hemorrhage or extension of the hematoma, which eventually, though insidiously, is as dangerous to life and limb as was the initial acute profuse hemorrhage. The extrusion of consecutive clots from an open wound or the intermittent progressive extension (not migration) of a hematoma demands immediate intervention before serious secondary accidents develop. These signs mean that one of the larger arteries has been injured, and for such injury there is only one remedy: direct stopping of the leak by either suture or ligation of the bleeding vessel. In such cases one should rarely rely on tamponade or the hope that a clot will be formed sufficiently firm to stop the hemorrhage.

At the bedside of every patient liable to secondary hemorrhage from an injured limb there should hang a rubber tube to be used by the nurse as a tourniquet the moment such hemorrhage is discovered and even before the doctor is notified.

In locations where proximal constriction is impossible, direct pressure to the bleeding vessel should be applied by the nurse either by means of a sterile dressing or, in extreme emergency, even by grasping and tightly squeezing the wound with hand or, this failing, by plugging the hole in the vessel wall with the bare fingers until the doctor can be summoned.

The latter may rapidly insert a hemostat or stuff the largest possible tampon into the wound, temporarily closing it with a few deep sutures so as to permit adequate preparation for operation and the induction of anesthesia.

Permanent Hemostasis.—This demands, first of all, asepsis. When life is at stake, when it seems that the patient is bleeding to death before one's eyes, the immediate stopping of the hemorrhage takes precedence over all other considerations. The moment the vital necessity has been taken care of, there should be no further precipitate action. Now all the requirements of surgical asepsis must be fully met, for infection makes permanent hemostasis illusory, the sloughing of perivascular and vascular tissue leading to repeated and disastrous secondary hemorrhages.

If it is decided that the vessel involved is small and unimportant and that operative intervention may not be necessary, the wound is loosely sutured and kept under close watch until all danger of hemorrhage or of spreading infection has passed. If it should be felt, however, that an important vessel is involved, there should be no temporizing with packing or continued direct compression, even though the wound is small and apparently clean. These measures only prevent the free drainage from the wound of foreign and occultly infected material. They expose the patient to the possibility of repeated secondary hemorrhages by exaggerating and complementing what may originally have been only a minimal contamination. In such cases the vessel should be first controlled by provisional occlusion and then exposed freely, the original accidental wound being avoided as far as possible. The final restorative or obliterative management of the vessel wound is then accomplished according to the indications discussed later.

In doubtful cases, when the size of the vessel is not known but there are minimal soft tissue injuries and there is no gross contamination or infection, the wound is left unsutured and carefully watched. At the first evidence of recurrent bleeding, clot extrusion or developing infection, surgical intervention is demanded. If the indication for intervention is recurrent external bleeding or extending hematoma or progressive clot extrusion, the surgical approach may be made as in the preceding type of case. If the indication is infection only, the situation is met by simple adequate drainage of the infected region.

The most harrowing situations in blood vessel surgery are those in which infection is accompanied by secondary hemorrhage. In these cases the problem of stopping further secondary hemorrhage is even more important than that of preventing gangrene. Too often temporizing measures are hazarded to preserve circulation in the limb at the cost of the patient's life by hemorrhage from failure to secure decisive control of the vessel. The majority of mistakes in handling such problems occur when an attempt is made to ligate the bleeding vessel by approach through the original infected wound.

For permanent hemostasis it is necessary to choose between (*a*) ligation at a distance, (*b*) direct ligation and (*c*) blood vessel repair.

(*a*) Ligation at a distance should be undertaken in all cases of secondary hemorrhage with infection and in all cases with extensive injuries to the soft parts or with evident gross contamination, for in these a moderate or even severe infection can usually be anticipated. Such cases should therefore be handled just as if they were already infected and recurrently bleeding. In deep, profusely bleeding wounds, much time and often much blood is lost in attempts to find and ligate the bleeding vessel. In such cases the wound would have to be much enlarged, as it is difficult to recognize the landmarks in an area infiltrated with blood. It may be the better plan therefore to expose the main trunk higher up and ligate it in continuity.

While the technic of the classic ligature of the various large blood vessels cannot be discussed here in detail, certain general principles may be emphasized. It is highly desirable to secure a diminution of the intralumenal pressure against which the ligature has otherwise to be tightened by temporary proximal compression of the vessel while the ligature is being drawn into place. This reduces the force and crushing that is otherwise necessary to bring the vessel walls into apposition. A double thread of coarse silk is then passed under the artery and the first thread is tightened slowly and steadily and knotted. Then, just above and close to it, the second thread is placed in the same manner.

(*b*) Direct ligation of the bleeding vessel becomes necessary when conditions prevent proximal ligation, as, for example, at the immediate root of an extremity or the base of the neck or where the collateral circulation is so rich as to allow continued hemorrhage, as in the hand, foot, head or neck. It should also be undertaken even after ligation at a distance has been accomplished, in order to avoid secondary hemorrhage.

The original wound should now be opened up freely, cleansed, and the ends of the divided vessels caught up and tied above as well as below the point of injury.

When oozing of blood from a deep wound is so profuse that it may be impossible to recognize the structures at the bottom, one may, to save blood, plug the cavity firmly with sterile gauze and then, as soon as the bleeding has been controlled, gradually raise the tampon, a small portion at a time, applying forceps to each bleeding point as it is exposed.

Neither forceps pressure nor ligation should ever be applied to tissue *en masse,* but only directly to the bleeding vessels, so as not to injure accompanying veins or nerves.

When there is infection in situations in which ligation at a distance is impossible, an incision is made over the bleeding vessel, the original wound being avoided as far as possible, and, with a minimum of dissection, the vessel is exposed and controlled. Its division is completed if necessary and the ends are closed by nonabsorbable suture. The incision is left freely open. The infected area is then freely incised to provide adequate drainage, and great care is exercised to expose every ramification of the spread of the infection. The importance under these conditions of completing the division of the vessel, as well as the importance of minimizing the dissection and the use of nonabsorbable ligature, must be emphasized.

While it is true that, as a general proposition, only absorbable suture material should be used in the presence of infection, in vascular surgery the presence of infection is the one condition that demands the use of nonabsorbable suture material, as only on it can sufficient reliance be placed. Infection prevents or delays the occlusive sealing of vessel walls. Occlusive thrombi are readily liquefied and there is urgent necessity for prolonged artificial occlusion by the ligature. Catgut with its uncertain absorbability cannot be relied on in these situations. Silk or linen must be used. This suggestion is not antagonistic to the doctrine that infected fields do not tolerate nonabsorbable suture material. This teaching applies only to situations in which the nonabsorbable material is buried within the wound. The condition which answers the objection to the use of silk or linen as ligature or suture material in infected vessel wounds is that these wounds be left widely open, just as Paré's amputation wounds were left widely open. For small vessels, fine silk ligature will serve. For larger vessels it is better policy to use thick ligature material, because this insures broad apposition with less devitalizing compression. Abernethy says: "When an artery is tied with a thick ligature, the compression made by it is not so great as to produce a speedy mortification and separation of the end of the vessel so that the ligature remains in general a fortnight before it is detached and therefore time is allowed for the consolidation of the sides of the vessel prior to the separation." Simple ligature is often adequate. However, the advantage of ligature by transfixion is, in general, obvious.

Either ligature or transfixion is applicable only when a material segment of the artery is exposed and sufficiently free from adjacent important structures. When the dissection necessary to obtain this vessel exposure would invite extension of the infection or jeopardize adjacent structures, another of the later developments of vessel technic should be utilized—closure of the divided vessel ends by suture. This suture carefully avoids all perivascular structures.

The proper management of the accompanying undamaged veins is still in question. Previous to 1913 it was a rather well founded idea that in wounds of large arteries the concomitant ligation of the accompanying vein led to gangrene of that extremity more frequently than did ligation of the artery alone. In 1913 the attention of the British surgeon Makins was called to the fact that, in the treatment of arteriovenous aneurysms, fewer cases of gangrene developed when the vein also was ligated than when only the artery was occluded. The studies of Oppel, Wieting, Holman and Edwards, and Brooks and Martin confirmed the observation that simultaneous vein ligation would be of considerable value in reducing the frequency of gangrene when the artery had been or had to be obliterated. This conclusion has been almost universally accepted, although the mechanism whereby gangrene is diminished is still in dispute. Wilson summarizes the theories propounded as follows:

1. Ligation of the vein restores the "balance of the circulation." This implies a belief that in occlusion of the artery alone the capacious main vein affords a too ready outlet for the diminished quantity of blood reaching the part below the occlusion. The blood tends to supply mainly the proximal tissues of this part and is not dispersed to the distal tissues. There is thus a condition of unbalance between inflow and outflow which, it is claimed, can be corrected by venous occlusion. A closely allied idea is that venous ligation keeps the blood in longer contact with the tissues, which are presumably enabled thus to extract more oxygen from it.

2. The theory has been formulated by Brooks of a more homogeneous distribution of the arterial blood. The main favorable influence according to him is the raised intravascular pressure, which serves to keep the capillaries patent in areas in which they would otherwise collapse, and this distributes the arterial blood more uniformly throughout the tissues.

3. The theory of the development of a "richer collateral bed" is the conclusion from certain injection experiments.

4. The theory of "masked sympathectomy" has been advanced by Leriche and Fontaine. They believe that the initial rise of arterial pressure in the limb after venous ligation is associated with a transient peripheral vasoconstriction, which is succeeded in some minutes by active vasodilatation and that these effects are produced by reflex action along sympathetic nerve fibers.

The results of Wilson's own experimental studies are not in accord with the previous experimental work on the subject. They do not support the current belief that ligation of the main vein diminishes the incidence of gangrene which follows ligation of the main artery. His results may possibly lead back to the older views, which encouraged preservation of the concomitant vein. These conflicting views from reliable sources make it inadvisable to take an arbitrary stand in this question until more evidence has been accumulated.

(*c*) With regard to blood vessel repair, in unimportant vessels or when collateral circulation is abundant it is better not to indulge in reparative methods. A simple obliterative method should then be used. At any point, in the presence of infection or of diseased vessel tissue, reparative suture should not be used. Thrombosis practically always follows and vitiates the purpose of the reparative surgery. The added manipulation required for the reparative suture only serves to aggravate the infection. It is much safer under these circumstances to resort at once, even with major vessels, to obliterative control, although one knowingly faces the possibility of subsequent gangrene.

In case of a small wound or perforation of the major vessel and when asepsis is possible, reparative suture is the method of choice. This is particularly the case in those locations in which gangrene is more likely to occur than in others. Thus, gangrene is much more likely to occur after main trunk injuries of the lower extremity and is rare after comparable injuries in the upper extremity. The most vulnerable sites of all are above the profunda branch of the femoral artery, in the popliteal region, and above the profunda branch of the brachial artery. In these locations especially are reparative methods desirable.

In cases in which the penetrating or incised wound is sharply cut and circumscribed, with no evident gross contamination, and especially when the wound edges have been freely washed by the outflow of blood, the danger of infection is usually slight. Restorative sutures are put in with the simplest possible technic and the least amount of manipulation, after the lumen of the artery has been temporarily occluded above and below the injury. If the wound in the vessel is uneven, its edges are freshened before suture. In small lateral wounds the continuous cross suture of fine silk is applied with closely set stitches, perforation of the intima being avoided as far as possible. The external coat is then brought together by a second continuous suture in an endeavor to secure a blood-tight closure without undue encroachment on the caliber of the vessel.

If the lateral wound exceeds two thirds of the circumference of the vessel, the accepted policy is to complete the division of the vessel, to freshen the ends and to perform an end-to-end anastomosis. If the resection required exceeds three-fourths inch, in most situations it will be impossible to effect a direct anastomosis without excessive tension. This can be obviated only by the insertion of a vein transplant or by using a Tuffier [1] tube. These may carry the main blood flow for a sufficient period of time to allow the adequate development of collaterals, but these are very hazardous procedures.

CARE OF COMPLICATING INJURIES

In wounds of large blood vessels, surgical management should be concentrated primarily on the care of the blood vessel wound. The care of concomitant injuries to tendons, nerves and bones should usually be relegated as much as they safely can be to a later period. When the management of the blood vessel wound requires obliteration of its lumen, the acute deficiency in blood supply makes the success of primary nerve or tendon suture dubious. When the blood vessel lumen is restored or reconstructed by suture, further extensive manipulation in the vicinity, in an effort to resuture the soft tissues accurately, jeopardizes the vessel repair on which the success of the whole operation primarily depends.

Such wounds should be sutured but loosely if at all. A common error is the accurate suture of the overlying tissues in ignorance of the vessel wound and the sealing in of foreign material, blood coagulum and whatever bacteria were included, to play secondary havoc with the vessel. The procedure to be followed in these cases depends on the size and importance of the vessel implicated. An estimate of the importance of the vessel injured may be obtained from the amount and force of the hemorrhage sustained before the temporary artificial control was applied. The points of entrance and exit and the probable path of a missile are also of some value, but they may be very misleading because of the erratic course which missiles often take between muscle and fascial planes.

Drains are rarely indicated in the management of vessel wounds. If suture or ligation has been done in a clean wound, drains not only withdraw the plastic exudate necessary for rapid healing but invite infection from the surface. If the wound is infected or contaminated, it should be left widely open. In these cases, drainage with closure is a compromise measure which ensnares only those who have not seen the disastrous consequences of this procedure. In case of doubt, it is much better to leave the wound widely open.

MAINTENANCE OF LIFE

Under conditions ideal for the management of these desperate cases, one should almost always include preoperative blood transfusion. This condition, however, is not frequently fulfilled. Compatible donors are often not immediately available. In cases in which a tourniquet has been applied to an extremity, the delay attending the selection of a donor and the administration of blood, coupled with the time necessarily consumed in the definitive operation, may exceed the period during which the limb can safely tolerate a deprivation of circulating blood. In locations where hemostasis is effected by direct compression rather than by application of a tourniquet, more time may be available for selection of a donor and blood transfusion. In every instance, if blood transfusion is not available, intravenous injection of physiologic solution of sodium chloride or acacia solution should be administered before or during the operation. In addition, in the desperate cases, full advantage should be taken of the effect of autotransfusion by bandaging the limbs.

A prophylactic dose of tetanus antitoxin (1,500 units) should not be omitted.

MAINTENANCE OF DISTAL CIRCULATION

The fourth factor for consideration in vessel wounds is the actual or potential damage to the circulation distal to the point of injury. The actual damage is that directly sustained through the trauma. The potential damage is measured by two factors. First is that which may be added by an increasing hematoma which shuts off the collateral supply. Second is that which is determined by the surgical sacrifice of vessel lumen incidental to the operative intervention. The viability of the part supplied by the injured vessel depends on the summation of these three factors. To estimate them one must know the importance of the vessel trunk injured to the life of the part it supplied, the abundance of the collateral circulation present to take its place, the extent of the direct damage to the vessel, the amount of hematoma pressure and the limits of effective surgical intervention imposed by destruction of tissue and concomitant infection or disease.

The preoperative status of the circulation distal to the point of injury can sometimes be determined by careful palpation or by the Pachon oscillometer. In the presence of alarming hemorrhage, however, this determination must wait on the control of the bleeding. In the extremities it can then be determined only during the first part of the operation, when provisional control has been substituted for the tourniquet. The provisional control is cautiously released and the amount of impairment of distal circulation is ascertained. From this apparent impairment must be sub-

1. Klotz, O., Permar, H. H., and Guthrie, C. C.: End Results of Arterial Transplants, Ann. Surg. **78**: 305 (Sept.) 1923.

tracted the factor of arterial spasm, which may be present in greater or lesser degree after vessel injuries or temporary constriction of the afferent circulation.

The final result of the management of acute vessel injuries requires not only the control of hemorrhage and of infection and the reduction to a practical minimum of the amount of vascular loss but the maintenance also of the life of the part supplied by the vessel involved. In many cases the amount of vessel substance that is lost or must be sacrificed to save the patient from fatal hemorrhage or infection is more than the limb can spare. Survival of the part is then secured only by the rapid and abundant development of collateral channels. Successful results were obtained in blood vessel surgery long before the importance of this collateral circulation was recognized. Even today in many cases in which some intricate method of vessel wound management is instituted, success is obtained not by virtue of the ingenuity of the surgical procedure but by the incidental generous development of collateral vascular channels.

The most recent major contribution to blood vessel surgery is the recognition of the importance of the collateral flow, and the discovery of methods that stimulate collateral blood vessel development to its greatest possible maximum. All adjuvants to the development of collaterals such as postural exercises, intermittent application of heat, passive vascular exercise by positive and negative pressures, intermittent venous congestion, or vasoconstrictor paralysis by nerve block are recommended as elective features of the postoperative program. Active encouragement in the use of these methods will reduce the percentage of postoperative gangrene and improve results to some extent.

POSTOPERATIVE CARE

While much depends on a nice choice of operative procedure in the care of the vessel wound and adjacent parts, too often the advantages thereby gained are promptly lost by injudicious postoperative care. In clean cases the details of postoperative care are designed to maintain the part in a physiologic norm. Both extremes of management, varying from unrestricted activity to the rigid immobilization and encasement that were so popular a generation ago, are to be avoided.

The part is kept in a comfortable position and a small amount of activity is encouraged. In the extremities this activity should be confined to the small acral muscles. It should not include gross movements of flexion and extension which puts a dangerous strain on suture lines and invites the loosening of emboli. The maximum benefits are gained when movements are not pushed to the point of fatigue. The part is protected from decubital pressure, especially over the bony prominences. It is kept warm, but extreme caution is exercised to avoid burning or maceration. The deficient blood supply lowers the resistance of the tissues to thermic insults.

In the infected cases, dependent and adequate drainage must be maintained. Full advantage is taken of the position in which the part is placed to maintain dependent drainage. Warm, moist dressings are used sparingly because the heat is difficult to stabilize, the moisture leads to maceration, and the dressing as a whole serves to obstruct free drainage. Frequent irrigation or treatment with dilute solution of sodium hypochlorite is much more advisable.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

ALLERGENIC EXTRACTS-MULFORD. — Liquids obtained by extracting the protein of substances believed to be the cause of specific sensitization.

Actions and Uses.— See general article Allergic Protein Preparations, New and Nonofficial Remedies, 1935, page 25.

Dosage.—See general article Allergic Protein Preparations, New and Nonofficial Remedies, 1935, page 25.

Allergenic Extracts-Mulford are marketed in 2 cc. ampule vials containing 1,500 protein units per cubic centimeter, except allergenic preparations marked (*), which contain 100 protein units per cubic centimeter.

Manufactured by Sharp & Dohme, Philadelphia and Baltimore. No U. S. patent or trademark.

*Almond Allergenic Extract-Mulford,[1] Apple Allergenic Extract-Mulford,[2] Apricot Allergenic Extract-Mulford,[2] Artichoke Allergenic Extract-Mulford,[2] Asparagus Allergenic Extract-Mulford,[3] Banana Allergenic Extract-Mulford,[2] Barley Allergenic Extract-Mulford,[1] Bass (Sea) Allergenic Extract-Mulford,[3] Bean (Kidney) Allergenic Extract-Mulford,[2] Bean (Lima) Allergenic Extract-Mulford,[2] Bean (Navy) Allergenic Extract-Mulford,[2] Bean (Soy) Allergenic Extract-Mulford,[2] Bean (String) Allergenic Extract-Mulford,[2] Beef Allergenic Extract-Mulford,[3] Beet Allergenic Extract-Mulford,[2] Blackberry Allergenic Extract-Mulford,[2] Bluefish Allergenic Extract-Mulford,[3] Brazilnut Allergenic Extract-Mulford,[1] Brussels Sprouts Allergenic Extract-Mulford,[2] *Buckwheat Allergenic Extract-Mulford,[1] Butternut Allergenic Extract-Mulford,[1] Cabbage Allergenic Extract-Mulford,[2] Cantaloupe Allergenic Extract-Mulford,[2] Carp Allergenic Extract-Mulford,[3] Carrot Allergenic Extract-Mulford,[2] Cauliflower Allergenic Extract-Mulford,[2] Celery Allergenic Extract-Mulford,[2] Cheese (American) Allergenic Extract-Mulford,[3] Cheese (Swiss) Allergenic Extract-Mulford,[3] Cherry Allergenic Extract-Mulford,[2] Chestnut Allergenic Extract-Mulford,[1] Chicken Allergenic Extract-Mulford,[3] Cinnamon Allergenic Extract-Mulford,[1] Clam Allergenic Extract-Mulford,[3] Clove Allergenic Extract-Mulford,[1] *Cocoa Allergenic Extract-Mulford,[1] Coconut Allergenic Extract-Mulford,[1] Codfish Allergenic Extract-Mulford,[3] Coffee Allergenic Extract-Mulford,[1] Corn Allergenic Extract-Mulford,[1] Crab Allergenic Extract-Mulford,[3] Cranberry Allergenic Extract-Mulford,[2] Cucumber Allergenic Extract-Mulford,[2] Duck Allergenic Extract-Mulford,[3] Egg Plant Allergenic Extract-Mulford,[2] *Egg White Allergenic Extract-Mulford,[5] *Egg (Whole) Allergenic Extract-Mulford,[5] *Egg Yolk Allergenic Extract-Mulford,[5] Fig Allergenic Extract-Mulford,[2] Garlic Allergenic Extract-Mulford,[2] *Ginger Allergenic Extract-Mulford,[1] Goose Allergenic Extract-Mulford,[3] Grape Allergenic Extract-Mulford,[2] Grapefruit Allergenic Extract-Mulford,[2] Haddock Allergenic Extract-Mulford,[3] Halibut Allergenic Extract-Mulford,[3] Herring Allergenic Extract-Mulford,[3] Hickory Nut Allergenic Extract-Mulford,[1] Honey Dew Allergenic Extract-Mulford,[2] Huckleberry Allergenic Extract-Mulford,[2] *Lactalbumen Allergenic Extract-Mulford,[6] Lamb Allergenic Extract-Mulford,[3] Lemon Allergenic Extract-Mulford,[2] Lentil Allergenic Extract-Mulford,[2] Lettuce Allergenic Extract-Mulford,[2] Lobster Allergenic Extract-Mulford,[3] Mackerel Allergenic Extract-Mulford,[3] *Milk (Cow) Allergenic Extract-Mulford,[1] Mushrooms Allergenic Extract-Mulford,[2] *Mustard Allergenic Extract-Mulford,[1] Nutmeg Allergenic Extract-Mulford,[1] Oats Allergenic Extract-Mulford,[1] Okra Allergenic Extract-Mulford,[2] Olive Allergenic Extract-Mulford,[3] Onion Allergenic Extract-Mulford,[2] Orange Allergenic Extract-Mulford,[2] Oyster Allergenic Extract-Mulford,[3] Parsley Allergenic Extract-Mulford,[2] Parsnip Allergenic Extract-Mulford,[2] Paprika Allergenic Extract-Mulford,[1] Pea (Green) Allergenic Extract-Mulford,[2] Pea (Black-Eyed) Allergenic Extract-Mulford,[2] Peach Allergenic Extract-Mulford,[2] Peanut Allergenic Extract-Mulford,[1] Pear Allergenic Extract-Mulford,[2] Pecan Allergenic Extract-Mulford,[1] *Pepper (Black) Allergenic Extract-Mulford,[1] Pepper (Red) Allergenic Extract-Mulford,[1] Pepper (Sweet) Allergenic Extract-Mulford,[1] Perch Allergenic Extract-Mulford,[3] Pineapple Allergenic Extract-Mulford,[2] Plum Allergenic Extract-Mulford,[2] Pork Allergenic Extract-Mulford,[3] Potato (White) Allergenic Extract-Mulford,[2] Potato (Sweet) Allergenic Extract-Mulford,[2] Prune Allergenic Extract-Mulford,[2] Pumpkin Allergenic Extract-Mulford,[2] Radish Allergenic Extract-Mulford,[2] Raisin Allergenic Extract-Mulford,[2] Raspberry Allergenic Extract-Mulford,[2] Rhubarb Allergenic Extract-Mulford,[2] Rice Allergenic Extract-Mulford,[1] Rye Allergenic Extract-Mulford,[1] Salmon Allergenic Extract-Mulford,[3] Scallop Allergenic Extract-Mulford,[3] Shad Allergenic Extract-Mulford,[3] Shad Roe Allergenic Extract-Mulford,[3] Shrimp Allergenic Extract-Mulford,[3] Smelt Allergenic Extract-Mulford,[3] Sole Allergenic Extract-Mulford,[3] Spinach Allergenic Extract-Mulford,[2] Squash Allergenic Extract-Mulford,[2] Strawberry Allergenic Extract-Mulford,[2] Swiss Chard Allergenic Extract-Mulford,[2] Tea Allergenic Extract-Mulford,[1] Tomato Allergenic Extract-Mulford,[2] Trout (Sea) Allergenic Extract-Mulford,[3] Tuna Fish Allergenic Extract-Mulford,[3] Turkey Allergenic Extract-Mulford,[3] Turnip Allergenic Extract-Mulford,[2] Vanilla Allergenic Extract-Mulford,[1] Veal Allergenic Extract-Mulford,[3] Walnut (Black) Allergenic Extract-Mulford,[1] Walnut (English) Allergenic Extract-Mulford,[1] Watermelon Allergenic Extract-Mulford,[2] *Wheat Allergenic Extract-Mulford,[1] Yeast Allergenic Extract-Mulford,[3] *Camel Hair Allergenic Extract-Mulford,[4] *Cat Hair Allergenic Extract-Mulford,[4] *Cattle Dander Allergenic Extract-Mulford,[4] *Chicken Feathers Allergenic*

Extract-Mulford,[4] **Dog Hair Allergenic Extract-Mulford*[4] **Duck Feathers Allergenic Extract-Mulford,*[4] **Goat Hair Allergenic Extract-Mulford,*[4] **Goose Feathers Allergenic Extract-Mulford,*[4] **Guinea-Pig Hair Allergenic Extract-Mulford,*[4] *Hog Hair Allergenic Extract-Mulford,*[4] **Horse Dander Allergenic Extract-Mulford,*[4] **Rabbit Hair Allergenic Extract-Mulford,*[4] **Sheep Wool Allergenic Extract-Mulford,*[4] **Cottonseed Allergenic Extract-Mulford,*[1] *Dust, House, Allergenic Extract-Mulford,*[9] **Flaxseed Allergenic Extract-Mulford,*[1] **Glue (Fish) Allergenic Extract-Mulford,*[10] **Horse Serum Allergenic Extract-Mulford,*[9] **Kapok Seed Allergenic Extract-Mulford,*[1] **Orris Root Allergenic Extract-Mulford,*[1] **Pyrethrum Allergenic Extract-Mulford,*[1] **Rice Polish Allergenic Extract-Mulford,*[1] *Silk Allergenic Extract-Mulford,*[1] *Tobacco Allergenic Extract-Mulford.*[1]

Allergenic Extracts-Mulford are prepared by extracting various substances with buffered salt solution, consisting of monobasic potassium phosphate (KH_2PO_4) 0.363 Gm., dibasic sodium phosphate (Na_2HPO_4) 1.43 Gm., and sodium chloride (NaCl) 5 Gm., in 1 liter of distilled water containing 0.4 per cent of phenol.

Products marked 1 are prepared for extraction as follows: The crude material is ground as fine as possible. The powder, or flour, is placed in a Buchner funnel and washed with carbon tetrachloride until the washings are clear and colorless. The carbon tetrachloride is removed with ether. The washings are discarded and the residue is dried. The dried residue is extracted under toluene with buffered salt solution from one to three days at room temperature.

Products marked 2 are prepared for extraction as follows: The fruits or vegetables are ground as fine as possible. Buffered salt solution is added to the ground pulp and allowed to extract under toluene from one to three days at room temperature.

Products marked 3 are prepared for extraction as follows: The muscle fibers, after the removal of fat and tendons, are ground as fine as possible. The ground muscle is washed with toluene until free from fats and oils. The toluene washings are discarded. The ground meat is extracted under toluene with buffered salt solution from one to three days at room temperature.

Products marked 4 are prepared for extraction as follows: The feathers or hair are washed with ether and the suspended particles of dander are collected by filtration. The dried material is extracted under toluene with buffered salt solution from one to three days at room temperature.

Preparations marked 5 are prepared for extraction as follows: The yolk of an egg is separated from the white in a sterile manner. One part of egg white, or egg yolk, is diluted with four parts of sterile buffered salt solution.

Lactalbumen, marked 6, is prepared for extraction as follows: The fat from 1 liter of milk is removed by centrifugation. The fat-free milk is saturated at 30 C. with magnesium sulphate, which precipitates the caseinogen and lactoglobulin. The filtrate is acidified with acetic acid so that the content of the acid is 1 per cent. The precipitate is filtered off, pressed out, and dissolved in water; the solution is neutralized and dialyzed. (Practical Organic and Bio-Chemistry, R. H. A. Plimmer, p. 446).

Milk, marked 7, is prepared for extraction as follows: One liter of fresh nonheated milk, from which the fat has been removed by centrifugation, is mixed with 3 cc. of 1 per cent rennin solution and placed in a water bath at 37 C. for one-half hour. The precipitated casein is removed by straining through a sterile towel. The filtrate is neutralized with saturated solution of sodium bicarbonate, and sterilized by filtration (*J. Immunol.* **15:** 2, 1928).

Dust, marked 8, is prepared for extraction as follows: The dust is washed with ether and extracted under toluene with a mixture of two parts of alkaline extracting fluid (2.5 Gm. of sodium bicarbonate and 5. Gm. of sodium chloride in 1 liter of distilled water) and one part of buffered salt solution saturated with carbon dioxide. The extract is dialyzed against the same fluid, passing carbon dioxide constantly during the period of dialysis. After dialysis, the extract is evaporated (electric fan) and, during the process carbon dioxide is kept constantly bubbling through the fluid (*J. Immunol.* **15:** 2, 1928).

Horse serum, marked 9, is prepared for extraction as follows: Normal horse serum containing 0.4 per cent of phenol as a preservative is used.

Glue, marked 10, is prepared for extraction as follows: Glue is extracted with buffered salt solution.

Allergenic Extracts-Mulford are tested and standardized in terms of "protein units." The unit is fixed at 0.001 mg. of protein. The total nitrogen is determined by the Kjeldahl method. The total nitrogen in milligrams multiplied by 6.25 equals total protein in milligrams. The total protein in milligrams divided by 0.001 equals the total number ot protein units.

ACRIFLAVINE BASE (See New and Nonofficial Remedies, 1935, p. 185).

Acriflavine Neutral-Calco.—A brand of acriflavine base-N. N. R.

Tablets Acriflavine Neutral-Calco, ½ grain (uncoated).

SCARLET RED MEDICINAL BIEBRICH (See New and Nonofficial Remedies, 1935, p. 180).

Scarlet Red Medicinal Biebrich-Calco.—A brand of scarlet red medicinal Biebrich-N. N. R.

IPRAL SODIUM (See THE JOURNAL, June 1, 1935, p. 1999).

The following dosage forms have been accepted:

Ipral Sodium Tablets, ¼ grain.
Ipral Sodium Tablets, 2 grains.

ANAEROBIC ANTITOXIN (See New and Nonofficial Remedies, 1935, p. 366).

Parke, Davis & Co., Detroit.

Gas-Gangrene Antitoxin (Combined) Refined and Concentrated-P. D. & Co.—Also marketed in vials containing 10,000 units of perfringens antitoxin and 10,000 units of vibrion septique antitoxin.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

RAYMOND HERTWIG, Secretary.

NOT ACCEPTABLE

GUNZENHAUSER CREAM-NUT BREAD

The Gunzenhauser Bakery, Inc., of Lancaster, Pa., submitted to the Committee on Foods a white bread named Cream-Nut Bread and prepared from white flour, water, condensed skim milk, lard, sodium chloride, sucrose, yeast, powdered skim milk, malt extract and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

Discussion of Name.—The name "Cream-Nut" implies the presence of cream and nuts in substantial quantities in the baking formula and sufficient to give the bread qualities and nutritional values not possessed. Cream and nuts are not ingredients and skim milk is the only milk product constituent. The name therefore is inappropriate and misleading. Food names should truthfully describe foods.

The bakery was advised over a year ago of the Committee's criticisms but as yet has not demonstrated that a change has been made in the product name. This bread, therefore, will not be listed among the Committee's accepted foods.

NOT ACCEPTABLE

ELTOLA DIETETIC LEGUME FLOUR

Manufacturer.—Eltola Flour Company, Huntington, W. Va.

Description.—Powdered legume (Lupinus) flour.

Manufacture.—Lupinus seeds, a legume product from Palestine, Syria and other tropical countries, are cleaned of foreign materials, washed with water, soaked in a solution of sodium bicarbonate and sodium chloride to remove the bitter taste, removed from the solution, spread on tables to dry, ground, sifted to remove the coarse hull material, and packed in wax paper bags in cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	5.7
Ash	1.3
Fat (ether extract)	21.8
Protein (N × 6.25)	49.7
Crude fiber	1.9
Carbohydrates other than crude fiber (by difference)	19.6
Starch	none
Sugar	none

Calories.—4.7 per gram; 133 per ounce.

Uselessness as a Special Purpose Food.—Eltola Dietetic Legume Flour is manufactured specially for use in diets restricted in dextrose formers. To be eligible for acceptance, such type of flour shall contain dextrose formers yielding dextrose in an amount not greater than 3.3 Gm. per hundred cubic centimeters (the dextrose equivalence being computed as the carbohydrate, plus 58 per cent of the protein, plus 10 per cent of the fat content of the food). Dextrose formers of this legume flour, however, yield many times the quantity of dextrose per hundred cubic centimeters that is permissible for acceptance.

There is authoritative evidence that commercially prepared special diabetic foods such as gluten flour are of limited usefulness to the diabetic patient and that the availability of insulin makes them no longer necessary. Artificial substitutes for ordinary foods are not to be favored; it is much better for the diabetic patient to learn how to plan his diet with foods in common use and readily available. The diet should be exactly prescribed in carbohydrate, protein and fat, and total calories.

The designation of a food as a "diabetic food" merely because it is low in carbohydrates is now unwarranted and misleading and gives the erroneous impression either that the food taken in unrestricted quantities in diabetes is harmless or that it has remedial action. Except for the necessity of restricting foods to avoid overstepping the food tolerance, there are no special diabetic nutritional requirements. The exploitation of starch-free or low carbohydrate foods containing an excess of protein

for use by diabetic patients is unwarranted. Protein may be tolerated almost as poorly, if not quite as poorly, as starch in diabetes.

Because Eltola Dietetic Legume Flour is adjudged without usefulness or special adaptability for inclusion in diets restricted in dextrose formers, it will not be listed among the accepted foods of the Committee on Foods.

ACCEPTANCE WITHDRAWN

RY-KRISP

Manufacturer.—Ralston Purina Company, St. Louis.

Description.—Whole rye wafer, flavored with salt.

Analysis (submitted by manufacturer).—

	per cent
Moisture	6.0
Ash (including added salt)	3.7
Fat (ether extraction method)	2.0
Protein (N × 6.25)	13.1
Crude fiber	2.2
Pentosans	9.8
Available carbohydrate (by difference)	63.2

Calories.—3.2 per gram; 91 per ounce.

Discussion of Advertising.—A booklet and leaflet, abounding with feminine sylph-like figures, proclaiming "Sylvia's message" for exercising and giving "Stay-Slim" menus and newspaper advertising contain the following statements:

"Ry-Krisp is one of my beauty secrets—says (Madam) Sylvia, Hollywood's miracle worker, the world's foremost authority on beauty. . . . No matter what your beauty problems are—dieting to improve or keep your figure need be no hardship—if you'll remember just one simple thing. Eat Ry-Krisp regularly. . . . These delicious wafers are made simply of flaked whole rye, water and salt—nothing to add superfluous fat, only wholesome ingredients which keep you fit and 'regular.' They're an ideal 'stay-slim' food . . . filling but not fattening. That's why Ry-Krisp has been included for years in the diets I've planned for the movie stars. It's really my assistant in helping you attain greater loveliness. You see I know when you eat Ry-Krisp regularly you don't want starchy, fattening foods,—instead you're getting a food which actually helps you to be slim and stay slim—because it helps to keep you fit. . . . Sylvia knows that these crisp wafers . . . are marvelously good for staying slim as well. . . . If you want a figure like a movie star, eat Ry-Krisp with every meal . . . they learned by actual experience that these crisp, delicious waters . . . actually keep you slim, because they keep you fit! . . . See how soon you begin to feel better—and look better, too. . . . If you want to have and keep a perfect figure, exercise properly and eat Ry-Krisp with every meal! . . . Miss Gloria Stuart, Universal star, has discovered that Ry-Krisp is a pleasant aid to keeping her famous figure at its best. . . . Why Ry-Krisp helps you to stay slim. . . . Nothing to make you fat—only easily digested ingredients which keep you fit and 'regular.' . . . In fact they keep you from wanting starchy fattening foods. That's why they're so perfect with meals—or between meals. Get the habit of nibbling at a Ry-Krisp wafer when you're hungry. . . . Eat Ry-Krisp regularly and watch your waistline waste away. . . . It doubles the joy of dad's favorite beverage—and is good for his waistline, too! . . . These crisp, delicious wafers are more than a perfect Stay-Slim food! Children and grown-ups welcome them because their unique flavor doubles the appetite appeal of any food. . . . For health and enjoyment serve Ry-Krisp with every meal! . . . Get the Hollywood Habit—exercise regularly, eat sensibly, use Ry-Krisp instead of heavy starchy foods—watch your waistline waste away. . . . Remember, when Ry-Krisp is used instead of heavy starchy foods, it's easy to transform many of your favorite menus into successful reducing meals. Ry-Krisp cuts the calories . . . follow the Hollywood habit and eat this delicious Ry-Krisp, you'll get a slim figure. . . . Ry-Krisp is a safe, natural aid to reducing and a wholesome healthful food. . . ."

Ry-Krisp is an entire rye wafer and as such has essentially the same nutritional values as the entire-grain cereals as a class. It provides a moderate quantity of fibrous material for increasing the indigestible bulk in the intestine, thereby contributing to the roughage necessary for normal bowel functioning. The protein is of good grade biologically, but inferior to milk or meat protein. The high available carbohydrate content contributes food energy for supplying physiologic energy needs. Ry-Krisp is essentially a carbohydrate food.

The advertising falsely portrays Ry-Krisp as possessing specific reducing properties. In fact, Ry-Krisp is a rich source of food-energy and taken in any quantity very materially raises the caloric value of the diet. No food has specific reducing properties, especially not Ry-Krisp. Ry-Krisp will contribute to the production of "superfluous fat" when included in any diet providing greater fuel content than required for meeting food-energy needs. It is no more a "stay-slim" food than bread or many other common foods. There is nothing about Ry-Krisp that will alter one's desire for "starchy, fattening foods" as alleged. It is a "starchy food" contrary to allegations.

Advertising making use of alleged or actual statements of movie stars for instructing the public on scientific nutritional questions does not merit recognition. The eating of Ry-Krisp will not make one look better, "keep a perfect figure," or make your "waist-line waste away." Ry-Krisp will not give "health" as stated and implied.

The advertising is grossly misinformative and misrepresents the food values of Ry-Krisp, its rôle in the diet, and the relation of any one food or the entire diet to the maintenance or reduction of body weight. Advertising such as this destroys confidence in food advertising in general and promotes misleading advertising practices.

Because of the false misleading advertising, acceptance of Ry-Krisp has been withdrawn.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

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1. FAULTLESS BRAND GOLDEN SYRUP
2. JACK SPRAT BRAND GOLDEN SYRUP
3. MARSHALL BRAND GOLDEN SYRUP
4. UNCLE WILLIAM BRAND GOLDEN SYRUP

Distributors.—2. Jack Sprat Foods, Inc., Marshalltown, Iowa. 3 and 4. Marshall Canning Company, Marshalltown, Iowa.

Packer.—Marshall Canning Company, Marshalltown, Iowa.

Description.—Table syrup; corn syrup flavored with refiners' syrup.

Manufacture.—Corn syrup, water and refiners' syrup are mixed, heated to 71 C. and sealed in cans.

Analysis (Submitted by packer).—

	per cent
Moisture	25.0
Total solids	75.0
Ash	0.5
Fat (ether extract)	0.0
Protein (N × 6.25)	0.04
Reducing sugars as dextrose	38.7
Sucrose (copper reduction method)	9.0
Dextrins (by difference)	26.8

(No methods are available for accurately determining the composition of syrups of this nature; therefore the foregoing analysis is roughly approximate.)

Calories.—3 per gram; 85 per ounce.

Claims of Packer.—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding, and as a syrup for cooking, baking and the table.

MARCO BRAND PINEAPPLE JUICE

Distributor.—H. A. Marr Grocery Company, Denver.

Manufacturer. — Alexander & Baldwin, Ltd., Honolulu, Hawaii.

Description.—Canned, unsweetened pineapple juice retaining in high degree its natural vitamin C content. Same as Greetings Pineapple Juice (THE JOURNAL, Aug. 17, 1935, p. 513).

STEWART'S BRAND TOMATO JUICE

Distributor.—The Jesse C. Stewart Company, Pittsburgh.

Packer.—Vincennes Packing Corporation, Vincennes, Ind.

Description.—Pasteurized tomato juice with added salt; retains in high degree the natural vitamin content. The same as Alice of Old Vincennes Tomato Juice (THE JOURNAL, Feb. 20, 1932, p. 640).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 30, 1935

THYROIDECTOMY FOR HEART DISEASE

Surgery applied to a normal organ, with the intention of altering the general physiologic functions of the body so that a condition in a distant and diseased part may be improved, must rest on a solid foundation. Among recent operative procedures of this nature is ablation of the normal thyroid in certain cases of chronic heart disease. The rationale of this measure rests largely on the work of Dr. Herman L. Blumgart, who in a series of studies beginning in 1925 was able to show a definite relationship between the rate of blood flow and the thyroid function as measured by the basal metabolic rate,[1] the flow being increased in exophthalmic goiter and slowed in myxedema. Blumgart and his co-workers were thus led to suggest that, when the circulation in decompensated heart disease could not be accelerated by digitalis, rest and other appropriate cardiac therapeutic methods, compensation might be achieved by lowering the circulatory demand through thyroidectomy. Such a procedure should decrease the speed of circulation as the demand is diminished by the falling basal metabolic rate. It would be expected that at some point the crippled supply, as measured by the rate of blood flow, would come into equilibrium with the lowered demand imposed by the thyroidectomy and thus compensation would result. Additional evidence of the rationale has been afforded by clinical observations of a number of patients with decompensated heart disease who were entirely, if only temporarily, relieved of their cardiac failure syndrome by subtotal thyroidectomy.

The failure of persistence of lowered metabolism and clinical cardiac improvement following the subtotal operation introduced total thyroidectomy. The first total ablation of the thyroid for chronic heart disease of nonthyrogenous origin seems to have been performed by Dr. David D. Berlin[2] on Dec. 15, 1932. During the succeeding six months the metabolic rate of the patient operated on remained persistently low, averaging minus 28 per cent. The patient was also restored to occupational usefulness in spite of three previous years of complete cardiac invalidism. The special surgical precautions and technic of total ablation of the thyroid have been largely developed and are adequately described by Berlin.

The cardiac indications for complete thyroidectomy are still in process of definition. Congestive heart failure in which prolonged medical management has failed to induce satisfactory results has been considered one of the indications. The selection of patients of this group for operation has been recently discussed by Levine and Eppinger.[3] There are some obvious contraindications, such as bacterial endocarditis or active rheumatic carditis. Accompanying renal insufficiency, not dependent on simple passive congestion of the kidneys, and cirrhosis of the liver are other contraindications. They feel in general that, if patients with congestive heart failure are selected at all, it should be done without great optimism. With regard to angina pectoris, the criteria of selection seem to be somewhat more definite. Levine and Eppinger, for example, state that a patient should not be subjected to this operation if able to carry on his occupation. Furthermore, if the patient is unable to work but his financial status permits him to lead a life of leisure, provided he is comfortable, operation would not be advised. Thus the economic and social status of the individual constitute an important element in the selection of patients for operation. There is furthermore no evidence as yet to show that the operation prolongs the life of a patient with angina pectoris, and therefore it cannot be recommended with this in view.

The possible harmful effects of complete thyroidectomy have been mentioned in practically all the discussions. The production of postoperative myxedema is an obvious probability but seems relatively immaterial, since it is possible to minimize effects of this nature by administration of small doses of thyroid extract without apparently undoing the results of lowered circulatory demand. The danger of parathyroid tetany has been insignificant. Even the operative mortality has been satisfactorily low, considering the nature of the procedure and the conditions for which it is performed.

The present status has been assessed by Graybiel and White:[4] "Complete removal of the thyroid in appropriate cases of angina pectoris has been established as a valuable procedure. Criteria for the proper selection of patients cannot be given categorically; the problem is more individual. It may be stated in general terms, however, that this operation may be considered for

1. Cutler, E. C.: Total Thyroidectomy for Heart Disease, Minnesota Med. **18**: 421 (July) 1935.
2. Berlin, D. D.: Therapeutic Effect of Complete Thyroidectomy on Congestive Heart Failure and Angina Pectoris, Am. J. Surg. **21**: 173 (Aug.) 1933.
3. Levine, S. A., and Eppinger, E. C.: Further Experiences with Total Thyroidectomy in the Treatment of Intractable Heart Disease, Am. Heart J. **10**: 736 (Aug.) 1935.
4. Graybiel, Ashton, and White, P. D.: Diseases of the Heart: A Review of Contributions Made During 1934, Arch. Int. Med. **55**: 842 (May) 1935.

patients for whom medical treatment is unsatisfactory if a sufficient lowering of the basal metabolic rate can be expected and if the patient's fitness for operation can be proved. . . . It is not possible," they say, "properly to evaluate the treatment of congestive failure by complete removal of the thyroid gland. . . . It has been shown that congestive heart failure can be abolished in at least half the patients operated on, and unquestionably most of these patients showed considerable subjective improvement. However, this does not decide the matter. It must be shown that improvement is sufficiently long lasting. A major procedure like total thyroidectomy must promise a comparatively great reward. Even if this operation is successful it must be remembered that the patient faces congestive failure again in a relatively short time with the reexperiencing of previous events. This involves a consideration not only of the patient's wishes but of far-reaching social and economic factors of which the patient is often the poorest judge."

Further conclusion seems, at the present time, unnecessary except that general application of the operation by those unfamiliar with the selection of patients or the surgical technic would seem wholly inadvisable.

FOOD VALUE OF ETHYL ALCOHOL

In considering its use for medical purposes, it should be possible to regard alcohol as one would any other therapeutic agent, uninfluenced by views of the use of alcoholic mixtures as a beverage. Although it cannot be doubted that fluids containing alcohol are toxic under certain conditions of dosage, this is not an argument against their use. Almost all drugs are toxic in doses larger than those used for therapeutic measures. Nevertheless, in considering any substance as a therapeutic agent, its physiologic and toxicologic effects must be kept in mind. This is particularly true with respect to alcohol, which, although supplying energy when oxidized, has certain properties, notably its effects on the central nervous system, that militate against its employment.

The ability of the animal body to absorb and oxidize ingested ethyl alcohol was established early.[1] There is much controversy, however, regarding the physiologic value of the energy thus made available. The numerous contributions to the subject of the metabolism of ethyl alcohol indicate that when it is ingested it is absorbed unchanged into the circulation; no digestive or breakdown process occurs in the intestine. The rapid rate of absorption of alcohol from the alimentary tract makes it a readily available source of energy to the organism. The therapeutic value of alcohol in collapse rests largely on this attribute. The oxidation of alcohol undoubtedly releases energy, but it has not been entirely clear whether the energy liberated is dissipated as heat or is available for physiologic work, thus sparing other food materials such as carbohydrate and fat. Suggestions have been made that alcohol in moderate quantities acts like an equivalent amount of fat and carbohydrate, as the addition of alcohol to an already sufficient diet leads to the deposition of body fat and thus to an increase in body weight. Furthermore, alcohol added to a diet otherwise inadequate immediately diminishes the degree of destruction of body protein.

Nothwithstanding some indication in the literature that ethyl alcohol has a measurable food value, the unsatisfactory nature of some of the evidence and the contradictory results have left this problem in a controversial state. This has led Mitchell[2] to conduct a careful and detailed investigation of this question. The practical importance of the problem becomes self evident in attempts to evaluate the nutritive quality of alcoholic beverages. The subject takes on additional significance in view of the apparently normal presence of alcohol in body tissues and fluids,[3] and its possible significance as an intermediary metabolite in carbohydrate metabolism.[4] In Mitchell's experiments, pairs of rats were fed equal quantities of a good basal diet, one animal of each pair receiving variable supplements of 95 per cent ethyl alcohol. The nutritive effects of the alcohol were measured by determining the growth rates of pair mates over a number of weeks of the experiment and by investigating the nitrogen and energy contents of the tissues formed from an analysis of the carcasses. The investigation included experiments in which supplements of sucrose replaced supplements of alcohol in order to compare the nutritive effects of these two compounds. The comparative effects of alcohol and sucrose supplements on the digestive processes were also studied by chemical examination of the feces of the experimental animals. In one series of experiments the rats were placed in revolving cages equipped with revolution counters, so that the alcohol supplements could be increased in size only as long as voluntary activity was not depressed. In other studies the animals were confined in small compartments with the view of greatly restricting the energy expended on muscular activity and of minimizing any differential expenditure between test and control rats. Careful evaluation of the experimental conditions and critical analysis of the data obtained demonstrated that the energy of ethyl alcohol is to a large extent available for physiologic purposes. When added to a complete diet, alcohol induces more rapid growth and a greater retention of nitrogen and fat. As compared with a similar supplement of sugar, the energy of an alcohol supplement is only about three fourths as available for

1. Emerson, Haven: Alcohol and Man, New York, Macmillan Company, 1932. Lusk, Graham: Science of Nutrition, ed. 4, Philadelphia, W. B. Saunders Company, 1928.

2. Mitchell, H. H.: J. Nutrition **10**: 311 (Sept.) 1935.

3. Gettler, A. O.; Niederl. J. B., and Benedetti-Pichler, A. A.: J. Am. Chem. Soc. **54**: 1476 (April) 1932.

4. Shapiro, Inez: J. Biol. Chem. **108**: 373 (Feb.) 1935.

physiologic purposes; its growth-promoting power is definitely less, though the composition of the new tissues produced is similar in the two instances. Alcohol apparently increased the digestibility of the basal diet, whereas sucrose exerted no appreciable effect in this direction.

These observations of the food value of ethyl alcohol are of considerable interest to the clinician. Although it must be accepted that in recent years the use of alcohol by physicians in the care of their patients has greatly decreased, alcoholic beverages may have a place in rendering more comfortable and peaceful the disturbances of chronic disease and old age. In addition, as a solvent of various medicinal substances alcohol performs a useful function, although the therapeutic rôle in this instance is limited. Even though the uses of alcohol as a therapeutic agent are limited and have largely been replaced by better therapeutic measures, the clear cut establishment of the food value of ethyl alcohol makes available useful information heretofore lacking to the physician.

Current Comment

NONSPECIFIC PROTEIN TREATMENT

In this issue appears the first of two special articles on nonspecific protein treatment, prepared under the auspices of the Council on Pharmacy and Chemistry. Hektoen [1] discusses briefly the nature of the reactions to nonspecific proteins in the treatment of infectious diseases. Next week Cecil [2] will review experiences and results with this treatment; he shows that modern protein treatment appears to have achieved "a permanent place for itself in modern therapeutics" not only of certain acute and subacute infectious diseases but also in other conditions, notably thrombo-angiitis obliterans. To this extent nonspecific protein treatment is a noteworthy achievement in empirical therapeutics of direct interest to the medical practitioner. Both articles point out that the effects of nonspecific proteins in infectious conditions are associated with nonspecific as well as specific anti-infectious processes. Differences in these effects in the same infection and in different infections cannot now be explained satisfactorily. It is evident that much more study of the changes induced by nonspecific proteins in the human body is required in order to obtain more of an insight into the nature and significance of these processes as they occur under various conditions. The opportunities for the investigation of the more intimate nature of the reactions in patients under treatment should not be neglected. In vascular disease, dilatation and release of spasm seem to be responsible for the good effects of protein therapy; but here also is need for closer study. From Cecil's review it appears further that the indications, contraindications and limitations of nonspecific protein treatment in its present forms are well under way toward fairly definite establishment. Certainly the indiscriminate and offhand use of the treatment is unwarranted and not free from danger.

1. Hektoen, Ludvig: Nonspecific Proteins: The Reactions to the Nonspecific Protein Treatment of Infectious Diseases, this issue, p. 1765.
2. Cecil, R. L.: Nonspecific Protein Therapy, J. A. M. A., to be published.

A NEW SKIN REACTION

Recently Foshay [1] has described a heretofore unrecognized dermal reaction to serum against certain bacterial infections. At the site of the intradermal injection of a small quantity of antiserum a spreading redness develops about a slightly elevated central edema. "The reaction usually appears promptly, within two to four minutes, sometimes less, and rarely not until ten to eleven minutes, and is usually from 3 to 5 cm. in diameter at the end of twenty minutes, sometimes larger. It is usually maximal in from twenty to twenty-five minutes after injection of the serum, and there is very often an intensification of the reaction after about six hours. Urticaria never occurs at any time, and only very rarely have any of these reactions been accompanied by itching. The erythema, however, is often intense and may spread rapidly. No constitutional symptoms accompany this local reaction. The initial erythema commonly lasts for only half an hour or so and then fades rapidly. This reaction has been seen only when a patient with a given bacterial infection has been skin tested with an antiserum specific for that infection. When individuals exhibit this simple erythematous-edematous reaction to the specific homologous antiserum, control injections of normal serum from the same animal species, and of antiserums specific for other infections, made from the same species, elicit no reactions whatever. Hence this E-E [erythematous-edematous] reaction is obviously unrelated to the phenomena of serum protein sensitization." The new reaction has been observed in tularemia, brucelliasis, tuberculosis, inguinal lymphogranuloma and typhoid, and in streptococcic, staphylococcic and gonococcic infections, but no definite statements are ventured as yet as to its frequency except that in tularemia it seems to be practically constant. It appears to concern a specific reaction between substances in the antiserum, most likely antibodies, and substances in the skin of the patient, most likely of antigenic nature, and consequently it may prove to be of diagnostic value. In typically positive form as well as when wholly negative the test may serve also to exclude sensitiveness to the antiserum injected. Foshay points out that the reaction has been and may be misinterpreted as a response to serum sensitiveness and thus lead to needless delay and difficulties in the administration of antiserum. He emphasizes that the absence of urticaria clearly distinguishes the new reaction from the reaction to serum sensitiveness. It will be of interest to watch the further developments in connection with this newly described skin phenomenon and, if Foshay's work is confirmed, its occurrence in various diseases, together with its significance and mechanism.

1. Foshay, Lee: Intradermal Antiserum Tests: A Bacterial-Specific Response not Dependent on Serum Sensitization but Often Confused with It, J. Allergy **6**: 360, 1935.

Association News

COMMITTEE TO STUDY CONTRACEPTIVE PRACTICES AND RELATED PROBLEMS

Dr. Everett D. Plass of Iowa City has been elected to membership on the Committee on Contraceptive Practices and Related Problems instead of Dr. James R. McCord of Atlanta, Ga., who declined to serve because of insufficient time to devote to the work of the committee. Dr. Carl Henry Davis was elected chairman of the committee. The committee as at present constituted consists of Drs. Carl Henry Davis, Milwaukee, chairman; George W. Kosmak, New York; W. A. Coventry, Duluth, Minn.; Richard J. O'Shea, Seattle; John Rock, Boston; Willard Richardson Cooke, Galveston, Texas, and Everett D. Plass, Iowa City, with Drs. James R. Bloss and W. C. Woodward, ex officio.

RADIO BROADCASTS

The American Medical Association broadcasts over the Blue network and certain additional stations of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time, 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program is "Your Health." The program is recognizable by a musical salutation through which the voice of the announcer offers a toast: "Ladies and gentlemen, your health!" The theme of the program is repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

The next three programs are as follows:

December 3. Tuberculosis, Morris Fishbein, M.D.
December 10. Hunting Accidents, Morris Fishbein, M.D.
December 17. Animal Diseases in Man, W. W. Bauer, M.D.

This program is broadcast also on the short waves through KDKA, Pittsburgh, over station W8XK, 11,870 and 12,210 kilocycles.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

"Science Edits the News."—At the request of Station KYA, the San Francisco County Medical Society now broadcasts exclusively over that station a program entitled "Science Edits the News." Before the first of the year the station is expected to increase its power to give the program full Pacific Coast coverage. The chief purpose of the program is to give the public facts in an ethical manner concerning newspaper items related to medicine and its allied sciences. It will be presented each Tuesday from 6 to 6:15 p. m. until further notice.

Group Insurance Against Malpractice.—The report of a committee appointed several months ago to investigate proposals of group malpractice insurance for members of the Los Angeles County Medical Association was accepted by the board of councilors, November 4. The report recommended that the association take steps to secure group insurance against malpractice and form a permanent committee on malpractice and expert testimony. It was further suggested that the council recommend to the board of trustees such increase in the annual dues as is necessary to finance a group policy.

Deaths from Poison in Baking Soda.—Three deaths in San Francisco have been attributed to poisoned baking soda, according to a warning broadcast over the radio, November 19, by Dr. Jacob C. Geiger, city health officer. Seventeen other persons in the city were reported to be violently ill when they ate food in which the soda was used or partook of it for medical purposes, it was stated. These cases were all traced to salvaged sodium bicarbonate sold retail by one store. Apparently salvage agents sold six barrels, and at least one barrel contained sodium fluoride, which mixed with the soda. Arsenic also was found in some samples analyzed, but its source as yet remains unexplained.

Society News.—At a meeting of the Los Angeles Society of Ophthalmology and Otolaryngology, November 25, a symposium on corneal ulcer was presented by Drs. Melverton E. Trainor, William A. Boyce and Alexander Ray Irvine.——The Los Angeles Society for Neurology and Psychiatry was addressed, November 20, by Bennett M. Allen, Ph.D., and Lawrence Gahagan, Ph.D., both of the University of California, Los Angeles, on "Experiments with the Hypophysis" and "Intelligence and Personality Studies in Epileptic Children," respectively.——Dr. Bruce M. Stephens, Alameda, discussed "Emergency Treatment in Common Eye Disorders" before the Alameda County Medical Association, November 18, and Dr. Theodore C. Lawson, Oakland, "Carcinoma of the Colon and Rectum."——At a meeting of the Sonoma County Medical Society in Santa Rosa, October 20, speakers included Dr. William B. Faulkner Jr., San Francisco, on surgery of the chest.——Dr. Henry Schmitz, Chicago, presented a paper before the Los Angeles County Medical Association, November 7, entitled "How May the Prognosis and Curability of Cancer Be Improved?"

COLORADO

Personal.—Dr. Marion F. Haralson, senior surgeon, U. S. Public Health Service, is now acting secretary of the Colorado State Board of Health, in the absence of Dr. Roy L. Cleere, Denver, who is at the School of Health Administration of Johns Hopkins University, Baltimore, for a year's study.

Society News.—At a meeting of the Crowley County Medical Society, October 11, in Ordway, speakers were Drs. John V. Ambler, Denver, and William C. Service, Colorado Springs, on "Acneform Eruptions" and "Eczema, Hay Fever and Asthma," respectively.——A symposium on tuberculosis was presented before the Garfield County Medical Society in Glenwood Springs, October 21, by Drs. George P. Bailey, Edgewater, and John Zarit, Denver.——Dr. George K. Cotton, Denver, discussed "Internal Derangements of the Knee Joint" before the Larimer County Medical Society in Fort Collins, October 2.——The Mesa County Medical Society devoted its meeting in Grand Junction, October 15, to a symposium presented by the team representing the committee on tuberculosis education of the state medical society; speakers were Drs. Charles O. Giese and John B. Crouch, Colorado Springs.——Dr. Cyrus W. Anderson, Denver, delivered a paper and showed a motion picture on "Physiology of Fertilization in the Human Female" before the Pueblo County Medical Society in Pueblo, October 15.——At a meeting of the Otero County Medical Society in October, Dr. Harold R. McKeen, Denver, discussed "Fractures In and Around the Elbow" and Dr. Atha Thomas, Denver, "Fractures of the Ankle."

ILLINOIS

Malaria Control Program.—Work was recently started on a program of malaria control in southern Illinois, where the disease is widely prevalent, according to the state health department. This is a WPA project, under direct supervision of the health department. Swampy areas in the malaria infected territory will be drained and the banks of lakes, streams and other natural bodies of water will be cleared to dry up mosquito breeding places and to make practicable the use of oil and minnows in controlling the propagation of insects.

Southern Illinois Meeting.—The sixty-first annual meeting of the Southern Illinois Medical Association convened in Belleville, November 7-8. Speakers included the following:

Dr. William E. Leighton, St. Louis, Division of the Anterolateral Tracts of the Spinal Cord for Relief of Pain.
Drs. Albert B. McQuillan and Wendell Stewart, East St. Louis, Calcification of the Collateral Ligaments of the Knee.
Dr. Charles Hugh Neilson, St. Louis, Effect of the Weather on Human Conduct and Disease.
Dr. Charles B. Reed, Chicago, The Social Security Act and the Doctors.
Dr. John W. Thompson Jr., St. Louis, Pyloroplasty in the Treatment of Duodenal Ulcer.
Dr. Frank P. McNalley, St. Louis, The Obstetrics of General Practice.

Dr. James S. Templeton, Pinckneyville, was named president at this session and Dr. Harvey Felts, Marion, secretary.

Chicago

Society News. — The Chicago Orthopedic Society was addressed, November 8, by Dr. Hiram Winnett Orr, Lincoln, Neb., on "Best Methods of Reduction and Fixation in Open Infected Fractures"; Stewart H. Crossland, Gary, Ind., "Acute Suppurative Arthritis," and Mrs. Davis G. McCarn, "The Work of the Illinois Society for Mental Hygiene."——The North Side Branch of the Chicago Medical Society was addressed, November 7, by Surg. Gen. Charles R. Reynolds and Dr. Raymond O. Dart, assistant curator, Army Medical Museum, Washington, D. C., on "Employment of the Medical and Allied Professions of the Military Service in a National Emergency" and "Scientific Research in the United States Army," respectively. —— A symposium on obstetrics was presented before the Chicago Medical Society, November 20; speakers included Drs. Stewart H. Clifford, Boston, and, from Chicago, Philip A. Daly, Frederick H. Falls, Edward D. Allen and Eugene Cary.

The Late Dr. LeCount Donor of Capps Prize.—At the meeting of the board of governors of the Institute of Medicine of Chicago, October 22, it was unanimously voted to enroll the late Dr. Edwin R. LeCount as a benefactor of the institute in recognition of his gift in 1931 of $10,000 for a trust fund to bear the name of Dr. Joseph Almarin Capps. The income was to be used to establish an annual prize for the most meritorious investigation in medicine in Chicago completed within two years after graduation by a graduate of a medical school in Chicago. The donor of the fund has until this time remained anonymous. Four prizes of $500 each have been awarded since the fund was established. Dr. LeCount was professor of pathology in Rush Medical College from 1892 until his death. He was a member of the House of Delegates of the American Medical Association in 1903 and served as chairman of the Section on Pathology and Physiology in 1920-1921. Dr. Capps is clinical professor of medicine at the Division of Biological Sciences, University of Chicago.

Maximum Sentence Imposed on Barron. — Kenneth Barron, operator of the Madison-Western Clinic, 2418 Madison Street, was sentenced to one year in the county jail and fined $500, November 14, by Municipal Judge Erwin J. Hasten, who found him guilty of practicing medicine without a license, newspapers reported. The penalty is the maximum on this charge. Barron's motion for a new trial was overruled, but the judge granted him a stay of mittimus for sixty days to allow time for an appeal. His bond was increased from $2,000 to $5,000 on recommendation of Assistant State's Attorney Sheer, prosecutor in the case. When he was unable to supply this bond, Barron, who is a former barber, went to jail. In imposing sentence, Judge Hasten said "Quack doctors are death dealers and a menace to the reputable medical profession. In reality, they prevent ignorant, gullible persons from getting the services of competent physicians. Instead of healers they become killers indirectly." The Madison-Western Clinic advertised its cut-rate prices in various newspapers. It was admitted that one death occurred at the clinic; a woman died during a tonsillectomy. This evidence was ruled out by Judge Hasten because it was barred by the statute of limitations, eighteen months having elapsed between the performance of the operation that caused the death and the filing of the complaint on October 8. A second charge against Barron, that of operating a clinic without a license for practicing medicine, was continued until November 21. It was Judge Hasten who a few months ago imposed a maximum sentence on an illegal practitioner, Raphael Lee (THE JOURNAL, June 22, p. 2272).

IOWA

Carbon Monoxide Responsible for Twenty Deaths.—Accidental poisoning attributed to carbon monoxide caused twenty deaths in Iowa during 1934, according to the state department of health. Ten of the deaths were caused by exhaust gas from automobiles, five fatalities taking place in home garages. The state department emphasizes in its bulletin that carbon monoxide poisoning constitutes a serious health problem. In poorly ventilated public garages, concentration of the gas may reach the dangerous level of 10 parts per 10,000 parts of air near the exhausts of cars which are kept running. In a street with heavy traffic, the concentration may exceed 1 part per 10,000 parts of air.

Society News.—Dr. William W. Bauer, Chicago, addressed a joint meeting of the Wapello County Medical Society and the Kiwanis and Rotary clubs, November 4, in Ottumwa, on "Health Education versus Health Racketeering."——The Iowa Society for Crippled Children was organized at a meeting, November 1, in Des Moines; Gerald Hunt, Gutenberg, past district governor of Rotary International, was named temporary president, and Miss Bess Johnson, principal of Smouse School, Des Moines, temporary executive secretary.——Dr. Arthur E. Hertzler, Halstead, Kan., will discuss "Diagnosis and Treatment of Uterine Hemorrhages" before the Linn County Medical Society in Cedar Rapids, December 12.

MAINE

Society News. — Speakers before the Aroostook County Medical Society at Mars Hill, October 22, included Drs. Oscar Norell, Caribou, "Our Present Organization and the Health Insurance Problem" and William B. Grow, Presque Isle, "State Medicine of Great Britain." —— Dr. Siegfried Thannhauser, Boston, addressed the Oxford County Medical Society in Bethel, October 15, on functional tests of the liver and dietetic treatment of liver diseases.

MASSACHUSETTS

Fifth Medical Pageant.—The fifth medical historical pageant was presented by students of Tufts College Medical School at the Boston Medical Library, November 18, under the auspices of the Boston Medical History Club. A display of manuscripts and books dealing with the characters in the play was arranged by James F. Ballard, director of the library. The theme of the pageant was the "Story of Early Medicine in Massachusetts," divided into three epochs: the Colonial (1620-1700); the Pre-Revolutionary period (1700-1775), and the Post-Revolutionary period (1775-1846).

Opposition to Sale of Strychnine. — The Massachusetts Medico-Legal Society adopted a resolution, October 2, discountenancing the sale or dispensing of strychnine in any form that covers or conceals its taste or in a container that is not clearly labeled as to name, amount in each dose, warning of "poisoning" if dosage is exceeded, and treatment if excess is accidentally taken. The society took this action in view of the many fatalities that have occurred among children who have been attracted to the candied coatings of the drug, either by itself or incorporated with other drugs in laxative and tonic tablets.

MICHIGAN

Coldwater School Becomes "Children's Village."—The Michigan Children's Village for care of children of the higher grades of mental deficiency has been established at Coldwater, occupying buildings formerly used by the Michigan State Public School. While these children will be gradually moved from the Michigan State Home and Training School at Lapeer, the village is not a branch of this institution, but a separate state organization. Recent legislation provided for the establishment of the Michigan Children's Institute at Ann Arbor to be used as a receiving home for dependent and neglected children formerly maintained at the Michigan State Public School. The institute will care for these children until private homes are found for them. Ann Arbor was selected because the University Hospital can give the medical and psychologic examinations necessary for successful placement. The children's village is expected ultimately to shelter between 300 and 400 mentally deficient children, while the institute will maintain quarters for only about thirty of the dependent children. Dr. Harry A. Schneider, formerly assistant superintendent of the Michigan Home and Training School at Lapeer, has been appointed superintendent of the Michigan Children's Village.

MISSOURI

Society News.—Dr. Walter Freeman, Washington, D. C., discussed "The Organs of the Endocrine System and Their Relation to Personality" before the Jackson County Medical Society, Kansas City, November 19.——A symposium on gastrointestinal diseases was presented before the St. Louis Medical Society, November 5, by Drs. Frank D. Gorham, Joseph W. Larimore, Leroy Sante and Louis Rassieur. At a meeting, November 12, Dr. Adrien S. Bleyer discussed "The Rôle of the Parasympathetic Nervous System in True Enuresis," and H. Tsuchiya, Sc.D., "Intestinal Parasitism."

Tuberculosis Conferences. — The health division of the department of public welfare of St. Louis announces the fourth annual series of tuberculosis conferences, the first of which, December 5, will be devoted to a symposium on the diagnosis of tuberculosis. The second, December 9, will be given over to demonstrations in health centers. A symposium on tuberculosis will make up the third conference, December 12, and the last will be a demonstration clinic at Koch Hospital, December 16. Announcement is also made of a course in maternal hygiene, to be held December 4, 11 and 18, and one on child hygiene, December 3, 6 and 10.

NEVADA

State Medical Meeting and Election. — Dr. Charles E. Secor, Elko, was chosen president-elect of the Nevada State Medical Association at the annual meeting in Elko, October 25-26, and Dr. Richard O. Schofield, Boulder City, was installed as president. Dr. Horace J. Brown, Reno, was reelected secretary, and Reno was chosen for the meeting place in September 1936. The program was as follows:

Dr. Lorenzo Dow Inskeep, Medford, Ore., Etiologic Factors in Epilepsy and Their Treatment.
Dr. Clarence Eliot Snow, Salt Lake City, Branchial Cysts and Lateral Cervical Fistulae.
Dr. Edward S. Pomeroy, Salt Lake City, True Status of Electro-removal of the Prostate with the Endoscope.
Dr. Charles W. Mayo, Rochester, Minn., Unilateral and Bilateral Hernia: A Comparative Study of Postoperative Complications.
Dr. Alfred W. Adson, Rochester, Minn., Treatment of Dysmenorrhea.
Dr. George A. Cochran, Salt Lake City, Medical Management of Peptic Ulcer.
Dr. Ralph C. Pendleton, Salt Lake City, Treatment of Major Burns.
Dr. John A. Fuller, Reno, Common Eye Affections.

NEW JERSEY

The Harrison S. Martland Lecture.—The Essex County Anatomical and Pathological Society has initiated a yearly lecture in honor of Dr. Harrison S. Martland, medical examiner of Essex County and associate professor of forensic medicine at New York University College of Medicine. The first Harrison S. Martland Lecture will be given December 14 at the Academy of Medicine of Northern New Jersey, Newark, by Dr. George H. Whipple, dean, University of Rochester School of Medicine and Dentistry, Rochester, N. Y., on "Problems in Anemia." Dr. Whipple will be introduced by Dr. Emanuel Libman, New York.

NEW YORK

Low Maternal Mortality Rate.—Recent figures compiled by the state department of health show that the maternal mortality rate in New York in 1934 (50.6 per 10,000 total births) was the lowest ever recorded except in 1916. The 1933 rate was 60.9. The greatest decrease took place in New York City and a slight increase appeared in rural areas. There were 979 deaths in the entire state, compared with 1,190 in 1933. In 1934 there was an increase in deaths from puerperal hemorrhage and toxemias of pregnancy, but those from other puerperal causes were the lowest in several years.

New York City

Queens General Hospital Opened.—The first municipal hospital in the Borough of Queens, the Queens General Hospital, was opened, October 30, with a ceremony at which Mayor La Guardia was the principal speaker. The 600 bed institution was begun in 1931. PWA grants amounting to $800,000 were made available late in 1934 for the installation of plumbing and equipment. The entire cost of the plant was $3,845,000. A comprehensive clinical organization has been set up. It has a visiting staff of 234 and thirty-seven interns and residents. Dr. Carl Boettiger is president of the medical board and Dr. Marcus D. Kogel, formerly medical superintendent of Cumberland Hospital, is medical superintendent.

OREGON

Firm Attempts to Dupe Physicians.—The Portland Better Business Bureau has issued a report on the "W. B. Mayo Laboratories," which recently appeared in Oregon, apparently from California. It advertises a nostrum known as "Dr. W. B. Mayo's Formula" for "overacidity." The attention of the bureau was directed to the concern, whose address is given as Medford, by an advertisement in Portland newspapers asking for men to represent a "nationally known corporation." Men who answered the advertisement were offered positions to call on physicians as representatives of a pharmaceutical firm. The salesman's job was to induce the physician to become a consultant for the firm and pay it $200. In return for this investment, the consultant would receive a proportionate part of 5 per cent of the profits of the company in the state; the bureau points out that, if 5,000 physicians contributed and the firm sold $1,000,000 worth of products in a year, it would still take twenty years for the physician to get his money back. It was also represented that the physician would receive patients attracted through a radio program. According to the Better Business Bureau of Los Angeles, where the concern appears to have an office at 3733 Wilshire Boulevard, the firm plans to spend $1,000,000 in radio advertising, in which it will be stated that "the W. B. Mayo Laboratories will gladly suggest a reputable physician in your community." Of course the physician would be one who had invested $200 in the business, the report points out. According to records of the American Medical Association, Woodward Bruce Mayo was born in Salt Lake City in 1891 and holds a diploma issued by Loyola University School of Medicine, Chicago, in 1917. He was licensed to practice in California in 1921 and his license was revoked in 1931 following a hearing on charges based on an illegal operation. His license was restored Feb. 27, 1933, and he was placed on probation for five years. Last February he was brought before the California board of medical examiners and it was decided that he should be cited to appear at the board's July meeting to show cause why his license should not be revoked again. In the meantime he disappeared from California. The Portland bureau adds that the concern failed to file a report and pay a license fee to the state corporation department for the fiscal year ended June 30.

PENNSYLVANIA

Graduate Assembly.—The Montour County Medical Society presented its first graduate assembly for the winter season at Geisinger Memorial Hospital, Danville, November 15. Guest speakers were Drs. Russell L. Cecil, New York, on "Types of Pneumonia and Their Treatment by Serum" and "Etiology and Treatment of Chronic Arthritis," and Vaughn C. Garner, Philadelphia, on "Some Common Dermatological Problems" and "Diagnosis and Treatment of Early Syphilis."

Philadelphia

Women's Conference on Cancer Research. — The Woman's Auxiliary of the Lankenau Hospital Research Institute for the Promotion of Cancer Research held its third annual conference on research in cancer, November 12, at the Century Club. Dr. Francis Carter Wood, New York, spoke on "What Progress in Cancer Research?"; Mrs. Marjorie B. Illig, representing the American Society for the Control of Cancer, New York, "The Challenge of the Day"; Mrs. John J. H. Phillips, chairman of the division of public health, State Federation of Pennsylvania Women, "Local Signs of Progress in Cancer Control," and Dr. Stanley P. Reimann, director of the Lankenau Hospital Research Institute, "Cancer Prevention."

Society News.—Dr. John L. Rice, health commissioner of New York City, delivered the James M. Anders Lecture of the College of Physicians of Philadelphia, November 6; his subject was "Looking at Tuberculosis, Cancer, Diabetes, Heart Disease and Syphilis from the Public Health Point of View." ——A symposium on pulmonary disease was presented before the Philadelphia County Medical Society, November 27, by Drs. Claude P. Brown, Isadore Kaufman, Eugene P. Pendergrass and Gabriel Tucker.——Speakers at a meeting of the Philadelphia Pediatric Society, November 12, were Drs. Robert T. Devereux, West Chester, "The Use of Liver Extract in the Treatment of Infection"; Herman Gold, Chester, "Studies on Whooping Cough Prophylactic Immunization," and Sidney Weiss, "Enuresis: A Statistical and Analytic Study."—— Dr. Jean R. Oliver, Brooklyn, addressed the Pathological Society of Philadelphia, November 14, on "The Abnormal Nephron of Chronic Hemorrhagic Bright's Disease."—— Dr. Warren T. Vaughan, Richmond, Va., will address a joint meeting of the North End Medical Society and the North Branch of the Philadelphia County Medical Society, December 19, on "Methods in the Study and Treatment of Food Allergy."

Pittsburgh

Society News.—Ex-interns of Western Pennsylvania Hospital held their third annual reunion at the hospital in October. Dr. George P. Muller, Philadelphia, gave the principal address, on proper uses and types of anesthesia.——Drs. John W. Shirer and George J. Wright addressed the Pittsburgh Academy of Medicine, November 12, on "Hyperthyroidism—Other Factors in Its Interpretation" and "Multiple Sclerosis Syndromes," respectively.——Speakers at a meeting of the Allegheny County Medical Society, Pittsburgh, November 19, were Drs. Ralph R. Mellon, on "Bacteriology of Common Colds"; Ehrhardt Ruedemann, "Sinus, Ear and Mastoid Infections Following Common Colds," and Charles J. Bowen, "Treatment of Common Colds," and Carlton E. Brown, Sc.D., of the U. S. Bureau of Mines, "Dust Respirators." The bureau of mines sponsored a scientific exhibit.

VIRGINIA

Society Elections.—The Virginia Pediatric Society at a meeting in conjunction with the annual meeting of the Medical Society of Virginia in Norfolk, October 15-17, reorganized and elected the following officers: Drs. Basil B. Jones, president; John S. Weitzel, vice president, and W. Ambrose McGee, secretary, all of Richmond. The Virginia Urological Society met at the same time and elected the following officers: Drs. Joseph F. Geisinger, Richmond, president; Charles J. Devine, Norfolk, vice president, and Linwood D. Keyser, Roanoke, secretary.

WISCONSIN

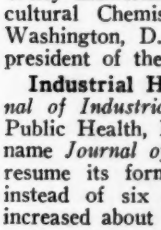
Society News.—Mr. J. George Crownhart, executive secretary of the State Medical Society of Wisconsin, addressed a joint meeting of the Racine and Kenosha county medical societies in Kenosha, October 29, on state medicine and health insurance.——Dr. Cleveland J. White, Chicago, addressed the Fond du Lac County Medical Society, Fond du Lac, in October, on diseases of the skin, with special reference to ringworm, acne, impetigo and eczema.——Speakers before a meeting of the ninth councilor district of the State Medical Society of Wisconsin in Wausau, October 30, were Drs. John S. Lundy, Rochester, Minn., on anesthesia; Walter C. Frenzel, Wausau, dextrose and its uses, and Gregory G. Shields, Abbotsford, trichinosis.——The Milwaukee Neuropsychiatric Society visited Madison for a meeting, October 31; speakers were members of the faculty of the University of Wisconsin: Michael F. Guyer, Ph.D., on "The Human Constitution as the Biologist Sees It"; Dr. Elmer L. Sevringhaus, "The Present Status of the Endocrine Glands," and Dr. William A. Mowry, "Allergy and the Central Nervous System."——The Milwaukee Society of Clinical Surgery met, November 26, to hear the following speakers: Drs. Alexander R. Colvin, St. Paul, on "Fracture Problems"; Frederic Christopher, Evanston, "Inflammatory Tumors of the Cecum Simulating Appendicitis," and Robert I. Hiller, "Postoperative Anuria."——Drs. Donald K. Bacon and Joseph F. Borg, St. Paul, addressed the Barron-Washburn-Sawyer-Burnett Counties Medical Society, Cumberland, October 29, on "Indications for and Uses of Blood Transfusion" and "Diagnostic Significance of Abdominal Pain," respectively.

GENERAL

In Memory of Dr. Wiley.—Walter Hoge MacIntire of the department of chemistry at the Agricultural Experiment Station, University of Tennessee, gave the fifth Harvey W. Wiley memorial address of the Association of Official Agricultural Chemists at the annual meeting November 11 in Washington, D. C. Dr. Wiley was a founder and the first president of the association.

Industrial Hygiene Journal Changes Name.—The *Journal of Industrial Hygiene*, edited at the Harvard School of Public Health, Boston, announces that in 1936 it will take the name *Journal of Industrial Hygiene and Toxicology*. It will resume its former publishing schedule of ten issues a year instead of six and the content of original papers will be increased about 50 per cent.

Annual Tuberculosis Seal Sale.—The twenty-ninth annual sale of Christmas seals by the National Tuberculosis Association and its constituent state and local societies opened November 29 and will continue till Christmas. The 1935 seal shows a girl of about 1860, designed as a reminder of the time when "consumption" was accepted as a plague whose victims were doomed. The sale of seals increased 5 per cent in 1934 over that for the preceding year, the first increase since 1929. The association recently announced that its monthly bulletin is to be expanded to publish brief articles, abstracts from other health periodicals, book reviews and news of tuberculosis activities.



Influenza Virus Desired for Study.—The Hospital of the Rockefeller Institute for Medical Research, New York, announces that staff investigators studying the virus of influenza are anxious to obtain new strains for study and comparison with those previously studied. Strains of a filtrable virus apparently having an etiologic significance have been recovered from several localized epidemics in Puerto Rico, Philadelphia and Alaska. The Rockefeller Foundation has requested state and city health officers to cooperate with the hospital. Dr. Rufus Cole, director, asks that health officials notify him by telegram collect of any outbreak of typical influenza, that he may take steps to collect the desired material.

Health Officials Tour Country.—Seven foreign health officials are guests of the U. S. Public Health Service in a tour of the United States to study new medical developments under the American social security program. The tour has been arranged by the League of Nations, and the itinerary includes New York, Washington, Baltimore, Knoxville, Tenn., Cincinnati, Chicago, Albany, N. Y., Boston and New Haven. Included in the party are Dr. L. S. Fridericia, professor of hygiene, University of Copenhagen; Dr. J. Parisot, professor of hygiene, University of Nancy; Prof. R. M. F. Picken, Welsh National School of Medicine, Cardiff; Dr. Einar Rietz, chief medical officer of health, Stockholm; Dr. H. van der Kaa, chief health officer of the Netherlands; Dr. Frank G. Boudreau of the League of Nations, and Dr. B. Boric, chief of the health service, Jugoslavia.

Annual Report of American Red Cross.—Seven hundred and sixty-five Red Cross nurses made 1,156,003 visits to 214,444 patients during the year ended June 30, 1935, according to the annual report of the American Red Cross. This represents an increase of 39 per cent over the previous year. Of the 633,944 school and preschool children inspected by the nurses, 325,329 were found to be suffering from one or more physical defects; 195,137 were treated by Red Cross or cooperating physicians. Immunization against diphtheria was a major project in many of the Red Cross chapters, more than 54,700 children being immunized, most of them of preschool age. Between 25,000 and 30,000 persons received treatment for pellagra. An increasing number of mothers and young women are taking courses in home hygiene and care of the sick, it was stated, 52,196 persons having completed this course in the past year. The Will Rogers Nursing Fund, established in 1934 through a gift of $25,000 by the late Mr. Rogers, assisted in supporting public health services in fifty-seven communities of twenty-seven states. Special emphasis was placed on malnutrition, especially among children, and in San Luis Valley, in southern Colorado, an oral hygiene project was inaugurated as the result of a large outbreak of Vincent's infection. There were 128 domestic disasters in which the Red Cross extended aid during the year, exceeding by forty-six, or 56 per cent, the average number of disasters annually requiring Red Cross assistance during the past ten years. Not only was the year heavy in the number of disasters, the report stated, but the geographic distribution was wide, with thirty-seven states affected in addition to the territory of Alaska; 110,000 persons were aided in these disasters. The total expenditures during the year amounted to $2,945,644.13. March 1, Admiral Cary T. Grayson took over the duties of chairman, succeeding Judge John Barton Payne, who died in Washington, January 24, within two days of his eightieth birthday.

Medical Activities of Rockefeller Foundation.—The annual report of the Rockefeller Foundation shows that, of $12,679,775 expended in 1934, $1,026,200 was appropriated for the medical sciences and $2,200,000 for public health activities. In the medical field emphasis was placed on advancement of neurology and psychiatry, for which aid of four types was provided: grants to universities and institutions for development of research and teaching, endowment and building funds for establishing departments of psychiatry, grants to individual investigators in mental disease, and fellowships to enable men and women to obtain advanced training. In public health the foundation engaged in field research on yellow fever, undulant fever, malaria, hookworm disease, tuberculosis, yaws and diphtheria; conducted yellow fever surveys and control campaigns; carried out malaria control projects; supported demonstrations of public health programs; aided in organizing or maintaining health departments, and contributed to the training of public health personnel through direct fellowships and aid to schools and institutes of public health and hygiene. Yellow fever research has demonstrated that there are two endemic areas in the world, one in West Africa and the other in the Amazon Valley of South America. It has also come to be recognized that yellow fever may be transmitted by vectors other than the stegomyia mosquito, a discovery that opens new problems to the investigator. In addition to these two principal divisions, the foundation appropriated $1,051,210 for the natural sciences, with specific concentration in experimental and physicochemical biology. President Max Mason indicated in a statement accompanying the report that in the immediate future emphasis will be placed on special fields and realistic research designed to meet definite and clearly recognized needs. It will continue its traditional work in public health; the major interest in medical science will continue to be mental health, and in the natural sciences support will be given to studies in the broad field of modern analytic biology, directed toward the understanding of physical and mental growth and development.

FOREIGN

Nobel Prize in Chemistry Awarded to the Joliots.—The Nobel prize in chemistry was awarded, November 14, to Prof. Frederick Joliot and his wife, Mme. Irene Curie Joliot, a daughter of the late Pierre and Marie Curie, discoverers of radium, for their synthesis of radioactive elements. They have succeeded in creating radium substitutes by bombarding atoms of ordinary chemical elements with alpha rays to make them radioactive. The Nobel prize was awarded to Madame Joliot's parents in 1903 for their joint discovery of radium and again to her mother in 1911 for her isolation of the element.

McDonnell Library Opened.—The Aeneas McDonnell Library at the Toowoomba General Hospital, Toowoomba, Queensland, Australia, was officially opened September 14. Dr. McDonnell, chief surgeon at the hospital for forty-six years, recently donated his medical library of about 300 books to the hospital, which arranged a special room for it. At the opening ceremony Dr. McDonnell announced his retirement from the active staff. Dr. McDonnell was born in Australia in 1864 and graduated from the University of Sydney. He has been a member of the Medical Board of Queensland since 1909.

Rockefeller Gift to London Hospital.—A gift of £60,000 to the National Hospital, Queen-square, London, for new buildings has been announced by the Rockefeller Foundation, with the condition that the hospital authorities raise £120,000 more, the remainder of the amount needed for the new construction. The foundation has offered another £60,000 toward an endowment fund for research, to be available for remuneration of workers. Plans include new teaching rooms, laboratories with special wards, and a new surgical department. National Hospital was the scene of much of the work of Hughlings Jackson, the great neurologist, and has long been recognized as a center for the study of neurology.

Government Services

Annual Report of Food and Drug Administration

During the fiscal year ended June 30, the Food and Drug Administration made 2,011 seizures and 1,029 prosecutions, both slightly larger than the corresponding figures for the previous year. More than 60,000 samples were collected and examined, nearly 50,000 of which were foods. These samples represent the output of more than 13,000 manufacturers, 3,000 of whom were responsible for some form of violation. The report points out that a definite plan of sampling is used, applied in the same manner in all inspection districts.

Violations are classified in three principal groups: practices constituting menaces to public health; adulterations involving contamination of foods with filth and decomposition, and economic cheats. Those in the first group, being obviously most important, take more time than any other effort. Of this type, spray-residue inspections are the most important single regulatory activity. The administration analyzed 6,331 samples from 3,300 producers; 338 seizures were made, 299 of which were apples. The largest number of these were in the Great Lakes and Mississippi Basin states.

The government inspectors investigated seventy-three outbreaks of food poisoning, including seven diagnosed as botulism, but there was no case of botulism from domestic supplies of commercially canned food. A notable fact was that not a single can of the salmon packed during the year was seized. In this connection may be mentioned administration of a new law adopted by Congress in 1934, providing that packers of sea food might apply for government inspection of their processes, the packer to bear the expense.

An unusual development was the seizure of old and deteriorated drugs, which unscrupulous brokers took in trade and tried to work off. Products were found that had been on shelves since before the enactment of the Food and Drugs Act. These dealers were especially active in Texas, where authorities destroyed twenty-eight tons of dangerous old stocks.

Medicinal preparations bearing false and fraudulent claims formed the basis of 177 seizures, of which 174 products were referred to the Solicitor General for prosecutions. Drug preparations other than proprietary medicines and medicinal whisky accounted for thirty-nine seizures, misbranded antiseptics two, alleged reducing substances four and products misbranded for vitamin claims six. A total of 2,298 samples of products recognized in the U. S. Pharmacopeia and the National Formulary were taken; of these, 1,958 met the requirements of the standards. Extensive sampling of anesthetic ether was continued; of 1,790 individual containers examined, only six failed to meet the requirements of the Pharmacopeia. A few seizures were made of other types of anesthesia. During the fiscal year 2,500 notices of judgment describing terminated actions were published. Penalties imposed ranged from 1 cent to $4,500, the first for the sale of butter short in weight and low in fat, the second against an eastern manufacturer for selling substandard citrate of magnesia. Two new divisions were created during the year, a unit for assay of vitamin claims in food products and for research in vitamin standardization, and a unit to handle the work connected with biologic products. These were reported in THE JOURNAL, August 17, page 522.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 2, 1935.

Further Development of the Social Medical Program

In the competition for votes at the general election, which is now proceeding, each party dilates on the benefits it is prepared to confer on the country if returned to power. One of these is extension of the public health service. In an election speech Sir Kingsley Wood, minister of health in the late government, said that development of the social services formed one of the most important parts of the government's election program. What was needed was a comprehensive plan for the development of the public services as a whole, with two main objects—protection of the community from unhealthy surroundings and complete provision for every individual of such personal services as might be needed at the various stages of life. In short, the policy was to provide decent conditions and the health to enjoy them. Considerable progress had been made toward the attainment of the first aim. The first essential of a healthy environment was a home. The national government had already a comprehensive housing policy, which was being carried out rapidly. It had made a direct attack on the two evils of bad housing—slums and overcrowding. Sixty-thousand slum houses had been pulled down and already 280,000 persons had exchanged the squalor of slum life for modern healthy homes.

MATERNITY AND CHILD WELFARE

Steady progress had been made with the provision of antepartum clinics, which increased from 1,101 in 1930 to 1,493 in 1934, and of hospital accommodations. This progress must be continued. But while the work had resulted in a gratifying reduction of infant mortality from 128 per thousand live births at the beginning of the century to 59 in 1934, there had been no reduction in the maternity mortality. The causes of this failure were not yet fully understood, and the government was giving unremitting attention to the problem. Notwithstanding the good work that was being done there were in many areas a gap in the health services and an urgent need for a salaried midwife service to secure for every woman who required it skilled care in childbirth. If returned to power, the government would introduce legislation for this purpose. Further provision was required for the needs of children under school age. In areas where the mothers could not give children the requisite care and attention, the government would encourage the provision of nursery schools in which good food, fresh air and skilled attention and training would give the youngest children a good start before elementary school days began. For the health of the school child elaborate provision was made in the school medical service, but in many parts of the country facilities for treatment, particularly dental treatment, were in need of expansion. These deficiencies would be remedied, and more remedial and preventive treatment in the form of orthopedic centers and open-air schools would be provided. At present there was no medical supervision between the time when a child left school and the age of 16, when he became eligible for health insurance. That gap would be filled. After children left school, health could be maintained only by systematic physical education, in which games and physical exercises played an important part. The government would promote a scheme of physical education covering all types of schools.

A Bone Setter Must Not Use the Title "Surgeon"

For fifteen years a bone setter had treated fractures, dislocations and disorders of bones and joints at Sheffield, Cardiff and later Paignton and other places in Devon and Cornwall, which he regularly visited. He put up a plate describing himself as

"manipulative surgeon." As he had no medical qualification, the Medical Defense Union wrote to him, pointing out that he was infringing the medical act in using the title "surgeon." He replied that he was not using the title surgeon and added "Prove that I am not a manipulative surgeon and I will remove the words from my plate." He was therefore summoned, but the court dismissed the charge that he was infringing the medical act. An appeal against this decision was made and was heard by the lord chief justice and two other judges. It was contended that the act contained an absolute prohibition against the use of the title "surgeon" by an unregistered person. For the respondent it was contended that he did not use the word "surgeon" by itself and that coupling it with the word "manipulative" was not unlawful and did not imply that he was registered under the act. The court reversed the previous judgment. The lord chief justice said: "If a man was not a surgeon he must not call himself surgeon and the use of the adjective 'manipulative' did not alter the case. If the respondent desired to represent to the public that he was not a qualified surgeon many other descriptions were open to him, such as 'manipulative healer.'"

District Nursing

An extensive charitable organization exists for "district nursing" (nursing the poor in their own homes). It owes its origin to William Rathbone, who in 1859 provided a nurse to work among the Liverpool poor. The Metropolitan and National Nursing Association was formed in 1875 by the Order of St. John of Jerusalem to train hospital nurses for district work. Subsequently county nursing associations were formed. In 1887 the work was consolidated and raised from the sphere of individual effort to that of a national institution. In 1926 it was calculated that, on a basis of one nurse for 10,000 of the population, nursing was provided for 75 per cent of the population. Subsequent experience showed that there is more work among an industrial population of 10,000 than one nurse can undertake. A survey of the district nursing in England and Wales, compiled by the Queen's Institute of District Nursing, shows that of the 39,864,184 population of England and Wales a nursing service is available for 38,206,867, or 96 and 87 per cent respectively in those countries. The increasing demand for domiciliary nursing indicates that an extension of the service may be expected. The income available for the service is about $5,000,000 per annum and a nurse costs about $1,150. In addition to the fund, money is collected in the form of gifts from patients and through provident payments.

The Care of Mental Defectives

Sir Laurence Brock, chairman of the Board of Control (which controls the administration of the lunacy laws) has stated in a public speech that mental defectives, if uncared for, usually live in the worst conditions. There was a danger that, unless something was done, they would turn model cottages into slums. This had happened in some parts of the country. Of 300,000 mental defectives in this country, two thirds need not be segregated but should be allowed to live in the community. Here voluntary workers could help a great deal under experienced trained organizers. The colony system was the most economical method of dealing with the other third. Some people suggested that, instead of the patients being allowed to live in attractive villas, it would be cheaper to build barracks. Initial costs were bound to be high, but he was hopeful that the cost of maintenance would be further reduced. The aim was to give an atmosphere of village life. Many mental defectives were keenly alive to their surroundings. Seeing that they had been deprived of their liberty for the benefit of the community, it was only fair that they should live under happy, pleasant conditions. There was a strong case for sterilization, although its advantages might be exaggerated. A better instructed public opinion was needed. It was far too common for well intentioned people to encourage the marriage of defectives when a girl was expecting childbirth. There was a far better chance for the illegitimate child of mental defectives if reared in an institution than for the legitimate children of defectives, often reared in deplorable homes. There was no justification for the dismal articles in the press suggesting national deterioration. The problem was far too serious to lend itself to sensational treatment.

PARIS

(From Our Regular Correspondent)

Oct. 25, 1935.

Congress on Gout

It is the custom of the leading thermal resorts in France to organize meetings every fall at which the ailments for which the individual resort is famous are discussed by leading medical men. The congress at Vittel this year was devoted to the various aspects of gout.

A paper on the pathogenesis of gout was read by Merklen and Wolf. Four elements must be considered: (*a*) uricogenesis, (*b*) uricolysis, (*c*) hyperuricemia and (*d*) elimination of uric acid. Uric acid is the result of disintegration of nucleins. The rôle of the four nucleic acids, which give rise to the nucleins, seems to be that of a buffer in compensating the variations of the acidity or alkalinity of the nuclear medium. The majority of organ extracts furnish ferments ready to act on nucleic acids, so that the conversion of the latter into uric acid is a widespread process in the organism; that is, every tissue can give rise to uric acid. This is especially true of the liver.

As to uricolysis, nitrogenous waste is eliminated so far as albumins are concerned in the form of urea, and for nucleins, in the form of uric acid. The latter as found in the urine is of either endogenous or exogenous origin. One encounters some cases of gout without hyperuricemia, but this is not true for the majority. Hyperuricemia is found in conditions other than gout, such as during the pneumonic crisis and in leukemia. The kidney in gout has a certain almost pathognomonic impermeability or threshold for uric acid, which appears early and is quite elective. The clinical study of attacks of gout reveals the existence of a striking analogy to other acute crises, such as those of asthma. The grouping gout, asthma and eczema is not an uncommon clinical finding, in all of which there exists a condition of hypersensibility of the neurovegetative system. To sum up the pathogenesis of gout, there is hyperuricemia as the result of faulty elimination, humoral instability with an exaggerated tendency to precipitation of acute attacks of gout under the influence of cholesterinemia, certain neurovegetative factors and finally participation in the formation of tophi by histiocytes and reticulo-endothelial tissue.

Gout and allergy were discussed by Pasteur Vallery-Radot and Mauric. For years the sensibility of gouty individuals to certain foods has been known. The attacks of gout are not an anaphylactic manifestation, although a specific hypersensibility exists in some cases. Although certain authors regard the tophi as a form of tissue allergy, the authors believe this to be not proved. All together, the rôle of allergy in the etiology of gout is not demonstrable beyond all criticism.

Brodin and Grigaud spoke on the metabolism of uric acid in gout. Uric acid is the end product of nucleoproteins, with the purines as an intermediary stage. The uric acid may have its origin thus in the food (exogenous) or in the tissues (endogenous). Retention of uric acid (hyperuricemia) is the direct result and often the first sign of inadequate renal activity.

The rôle of the liver in gout was the subject of Noel Fiessinger's paper. One finds large livers the seat of a hypertrophic cirrhosis in gouty individuals. As the cirrhosis develops and is accompanied by signs of hepatic insufficiency, the gouty manifestations recede. Icterus in gout is rare and, if present, is due to other causes; but cholelithiasis is a frequent finding.

Fiessinger does not believe that such a biliary lithiasis is to be associated with a hypercholesterinemia, any more than the gouty tophi due to a hyperuricemia. He is of the opinion that the liver in gout allows nonmetabolized purines to remain in the circulation. Uric acid is an inert end product. The still undiscovered chemistry of gout lies in the metabolism of purines and xanthines. The entire body, and not the liver alone, plays a part in the metabolism of purines.

Loeper and Lemaire spoke on disturbances of nutritive exchanges in gout. The real cause of hyperuricemia is still unknown; that is, whether it is due to an excess of uric acid in food, abnormal formation in the tissues or inadequate elimination. One always finds a hypercholesterinemia, so that it is indispensable to make tests as to the existence of this condition, in the form of an intradermoreaction, a flocculation test and an estimation of the cholesterolytic power of the blood serum.

Guy Laroche maintained that biochemical studies are of great interest in gout but that it would be dangerous to base one's treatment on the results of laboratory research alone. Clinical experience should play the dominant part by (*a*) regulation of the digestive function, (*b*) giving the overworked liver a chance to recuperate, (*c*) stimulating elimination by the lungs, kidneys and skin, and, finally, (*d*) giving sedatives for the unstable neurovegetative system. A diet too rich in purines is not the sole underlying cause of gout, but a disturbance (endogenous) of nitrogen metabolism ending in excessive uric acid production or elimination is just as important. It is a fact based on clinical and biochemical observation that a meat diet is harmful and a vegetable diet beneficial in gout. Hence foods rich in purine or oxalates should be suppressed. The same is true of alcoholic beverages. Attention should be paid to general hygiene and to physical exercises. Although climate does not play an important part, it is advisable to avoid a sojourn at the seashore or in cold regions.

De Gennes discussed the atypical forms of gout. One sees less frequently now the classic localization in the joints of the toe, but, on the other hand, the atypical forms have become common. The polyarticular form may resemble an acute articular rheumatism; but the age of the patient, the tendency to involve fewer joints, the resistance to salicylates and the almost specific action of colchicum make the diagnosis of gout easy. The pseudophlegmonous form is the most important of the atypical forms of gout. It may resemble a diffuse cellulitis at some distance from an articulation and may impress one, by its diffuse redness, edema and associated regional lymphadenitis, as being an acute suppuration. The phlebitic type is not difficult to diagnose except in cases in which there is no accompanying joint involvement. One of the most interesting of these atypical forms of gout is that in which the joint effusion and periarticular edema are not accompanied by acute symptoms and thus resembles a tuberculous arthritis. The differential diagnosis can be readily made by the prompt response to colchicum in gouty arthritis. It is easy in these atypical forms to make a diagnosis of gout if tophi are present, but these are lacking in the majority. The blood examinations for excess of uric acid or cholesterol is not to be depended on in these atypical forms of gout. The rapid development of the muscle and articular lesions, the absence of an atrium of infection, the good general condition of the patient and the quick response to colchicum constitute the best arguments in favor of an atypical form of gout. De Gennes does not believe that there is such a clinical entity as visceral gout. Such symptoms are due either to renal or cardiac insufficiency or to hypertension.

Perrin and Abel spoke on the medical treatment of gout. The principal drugs to relieve the symptoms are the derivatives of salicylic acid, especially sodium salicylate, then the cinchophenic derivatives whose base is quinoline, and colchicum. The latter may be regarded as an almost specific drug in acute gout but it must be employed with much discretion and only when cardiorenal complications do not exist. In chronic gout, colchicum should be discarded in favor of the salicylate and cinchophenic derivatives. Other drugs that act as uric acid solvents are also indicated. Tonics (iron, arsenic) also must be given from time to time. There has been much discussion of alternating alkali and acid treatment. The results have been good, but one has not yet been able to explain them on a scientific basis.

Lian and Gilbert-Dreyfus took up the cardiovascular system in gout. Symptoms of this character are relatively rare in gout and the latter plays an insignificant part in the etiology of atherosclerosis, hypertension and angina pectoris.

BERLIN

(From Our Regular Correspondent)

Oct. 7, 1935

Further Developments at the Universities

Reference has been made in several letters to the influence exerted by the new political régime on the universities, university instruction, the instructional corps and the student bodies. Further developments have taken place of late.

GENERAL AIMS OF THE UNIVERSITY

At the dedication of the new Cologne university, a few months ago, Rust, the minister of public instruction, expressed his views on the general aims of the university. He said: "Our science and our research have their fundamental origins in the hearts and the minds of our people. Consequently it is clear that much that has hitherto been surrounded by a halo of unquestioned acceptance is now declining and will soon sink into oblivion." He brought out further that the realms of the spirit dominating our intellectual life are undergoing a gradual metamorphosis. Even the erudite professors would have to unlearn much and learn much that is new. Professor von Haberer, surgeon and rector of the University of Cologne, emphasized on this occasion "how infinitely difficult the metamorphosis of the German people in the spirit of the new ideas was going to be. The establishment of the national-socialist German folk culture, planned so majestically over a period of many centuries, can be brought about only at the cost of untold labor, and will require, on the one hand, great caution and discernment and, on the other hand, a keen insight into the future." He said that as rector (president) he would administer the affairs of the university in the spirit of the new Germany. The spirit to which he gave expression was that of a university of, for and by the German people. It was in line with this spirit when, in July, Dr. Wagner, the federal fuehrer of the physicians, emphasized that "the new trend of university policies is controlled by the national-socialist party and the way that the party plans to go is so clear that no further discussion is needed." The remark of Dr. Ley, the fuehrer of the German labor front, concerning "the unchecked devotion to the god of science" is also deserving of mention.

On the other hand, the approval by the university instructors of all these decrees and newer trends is not so universal or so complete as may appear. The views expressed at the festivities in commemoration of the founding of the University of Munich caused dissatisfaction in government and party circles. To express it tersely, the spirit of the instructional corps was disapproved. The traditional celebration held in the university "aula" drew only a small representation of the instructors (less than 25 per cent), who were supposed to attend in a body and sit with the members of the national-socialist student league. The lack of participation in the prize essays and the mediocre quality of the essays presented at the commemorative ceremonies have been taken as evidence of inadequate cooperation between the instructors and the students. In response to a letter from the Bavarian "ministerpräsident" to the rector (president) of the University of Munich, which gave expression to these criticisms, the latter answered that he wholly

disapproved the attitude taken by the university instructors at the commemorative exercises.

The federal minister of public instruction has issued instructions with a view to making the administration of the universities more uniform. The university personnel is divided into the instructional corps and the student body. The instructional corps consists of the teaching force of the university, together with assistants. The head of the university is the rector, who is subordinate to the minister and immediately responsible to him and to him alone (formerly the rector of a German university was chosen by his colleagues, or fellow instructors, and was *primus inter pares* for the period of one year). The prorector, or vice president, and the deans of the faculties are appointed by the minister from a list of candidates proposed by the rector. The "studentenschaft," or official student body, comprises students of German origin whose mother tongue is German, irrespective of the country to which they owe allegiance. The leader of the official student body of a university is appointed by the minister of public instruction following suggestions obtained from the rector and the "gaufuehrer" (county chairman) of the national-socialist student league, and he is under the authority of the minister. The university "senate" serves the rector now merely in an advisory capacity. This covers the most essential provisions of the new order at present in force at German universities. Thus, the official student body (the "studentenschaft") has acquired equal rights with the instructional corps. The "senate" was formerly the chief authoritative body of the university, but now it has only advisory functions. It is apparent, therefore, that the rigid application of the "fuehrer" principle has had a marked leveling effect on all the university personnel, including both instructors and students. The deans are now the fuehrer of their respective faculties.

A doctor's degree in a new field can now be secured. The University of Hamburg is conferring a doctor's degree for advanced study in "sportwissenschaft," or the scientific aspects of participation in the various sports and the supervision by athletic directors of the devotees of sport activities. Athletic directors and instructors in the various sports (coaches) may now present a scientific thesis in the field of physical education. In the instructional corps a complete reorganization has taken place. All members of the national-socialist party within the instructional corps of the several universities, including the assistants, have been organized into a national-socialist league of university instructors, which, in combination with the national-socialist league of students, constitutes the official party organization at the universities. The league of the instructors and the league of the students are expected to work together in the closest manner. The local fuehrer of the league of instructors and likewise the fuehrer of the league of students are under the authority of the so-called party service centers in matters of discipline.

Likewise in the scientific activities of the university certain controls have been introduced. Among other things, the minister of public instruction has decreed that all persons under his jurisdiction (that is, all professors, instructors and students) who are requested to deliver lectures in a foreign country or who wish to attend international congresses or similar conventions, to be held in foreign countries, must secure his approval. The purpose of these restrictions, it is officially stated, is "to make sure that representatives of German science who are heard in foreign countries shall be of the type that will best conserve the cultural and political interests of the reich." In many cases the foreign office and/or official sources of information in foreign countries will be consulted before a decision is reached. The minister of public instruction likewise demands that full-time university instructors shall not assume any secondary duties or take on themselves any secondary tasks without first securing his approval of such undertakings. Head physicians and assistants in clinics may serve private clients only after securing his consent. It is thought that, in many cities in which universities are placed, local physicians will appreciate this attempt to remedy a long existing evil.

In a previous letter (THE JOURNAL, April 6, p. 1259) reference was made to the new regulations governing the "entpflichtung" of professors, or debarring them from holding the particular courses of lectures that are naturally incident to the chair that they hold. Now the limitation of the rights of professors who have been "relieved of their official duties" has been put on a different basis. Formerly, such professors had the privilege of continuing their lectures as free lances, or at least of delivering lectures on some branch of their special field, in case they had been compelled to turn over to their successor their central course of lectures. Many of the professors thus "relieved of their official duties" made use of this privilege, and their lectures were often gladly attended by the students as a supplement to the usual courses. Now the minister of public instruction has ordered that the professors thus relieved of their official duties shall not have the right to continue their activities as lecturers, even though their new courses of lectures do not conflict with the courses of their successor. Consent to continue lecturing will be granted only "in case the petitioner (that is, the professor relieved of his duties) furnishes the assurance that he will endeavor to fit in with the new spirit that now prevails in the German universities, and that his political attitude will not endanger the educational work that the national-socialist party has planned for the academic youth." Furthermore, the lectures of professors who have been "relieved of their official duties" must not interfere in any way with the central courses of lectures that are to be taken over by the new incumbent of the chair, whether his appointment is merely provisional or definitive, since to him, as the occupant of the chair, must be reserved the right to map out his courses as he deems best.

The Crusade Against Cancer

The ministry of the interior and the ministry of public instruction have agreed to cooperate with the city of Berlin in carrying on a crusade against cancer. Their common endeavors envisage the support of all practical and scientific movements and collective action with respect to all organized efforts to suppress all forms of cancer, in providing continuation courses for physicians, and in the better training of the oncoming generation of physicians. The execution of the extensive plan is based on large-scale arrangements in the largest Berlin hospital, the Rudolf Virchow-Krankenhaus, whose clinical departments and modern roentgenologic institute furnish especially favorable conditions, which can be still further amplified as need arises. Within this hospital a large "general institute for the combating of cancer" has been created, in which treatment, research and instruction will go hand in hand. The university institute for cancer research, established many years ago at the Charité Hospital in Berlin, has consented to cooperate in this collective movement, although the two institutes will preserve their complete independence. The whole movement as so organized will keep in close touch with the federal commission for the combating of cancer, of which Professor Borst of Munich is chairman. The mayor of Berlin and the medical faculty of the University of Berlin are members of the honorary committee of the institute.

The creation of this institute is not designed to effect a concentration of cancer treatment; on the contrary, every clinic and every hospital, within the range of their capacities and equipment, will continue to participate in scientific research and in treatment. In the new institute the clinical point of view will be in the ascendency; hence Professor Sauerbruch has been chosen director. The new institute has already begun to function, and many cancerous persons are being brought in.

AUSTRALIA

(From Our Regular Correspondent)

Oct. 11, 1935.

Annual Meeting of British Medical Association at Melbourne

As stated in a previous letter (THE JOURNAL, November 16, page 1620), the one hundred and third annual meeting of the British Medical Association opened September 9 in Melbourne.

THYROTOXICOSIS

The most interesting scientific session, a joint meeting of the sections of medicine and surgery and one that was attended by 800 members, was the discussion on thyrotoxicosis. Lord Horder considered that the thyroid hyperplasia associated with exophthalmic goiter was not a primary but a secondary phenomenon. The causa causans remained obscure, although partial thyroidectomy might interrupt a vicious circle, just as a splenectomy could in splenic anemia, but did not get rid of the cause of the trouble. The existence of a diathesis in the disease was generally accepted. Of the predisposing factors little was known: sex, certain collateral familial conditions and an autonomic imbalance. Of exciting causes there were the sex epochs, psychic trauma and focal sepsis. The evidence regarding associated endocrine defects was entirely unconvincing. The recognition of the diathesis called for preventive treatment: this was a thankless task. The simple life was necessary, and for those patients who accepted the control and cooperation of the medical attendant there was a good promise of stabilization. If the symptoms persisted in spite of controlling the patient's routine of life, and whenever the full syndrome had developed, absolute rest in bed for at least three months was needed. There were no specific drugs, but belladonna, among others, had been found useful. The operation of thyroidectomy should be undertaken if the patient failed to respond to six months' careful medical treatment, in cases that relapsed, and when associated with auricular fibrillation or congestive heart failure.

Sir Thomas Dunhill drew attention to the steady advance of the stage at which operation was now performed. Roentgen therapy had its place in the treatment of the early stages, and in young people. In severe cases and older patients, the results from surgery were better. He preferred the one stage operation. Auricular fibrillation was the commonest complication. He found that 84 per cent of his series regained their normal rhythm after operation, and 6.5 per cent had died. The next common complication was glycosuria, which was sometimes insulin resistant. Mental disorder was next on the list, and the difficulty of this complication arising after the operation was mentioned. Emaciation was a factor that would always keep the general death rate of the operation up to 3 per cent.

Prof. C. E. Hercus of New Zealand drew attention to the thyroid and hydatid mindedness of the dominion physicians. New Zealand had the highest relative death rate from thyrotoxicosis in the world—three times as great as Great Britain. He said that endemic goiter and thyrotoxicosis hunt together. Nearly all cases of goiter exhibited some degree of toxicity; therefore the division into primary and secondary had no pathologic basis.

Dr. A. W. Holmes à Court of Sydney urged the necessity of giving iodine for a fortnight before operation. The patient was then at the height of a remission.

Sir Carrick Robertson of New Zealand was convinced that the toxicity of adenomatous goiter was increasing. His practice was to remove from four fifths to five sixths of the gland in one stage if possible. The preliminary ligation of the superior thyroid artery had not, in his experience, improved the patient. His mortality rate was 0.9 per cent. Two of these had "woody" thyroids, and four suffered from the type described by Lahey as "apathetic" hyperthyroidism.

Dr. Turnbull of Melbourne had found that the pulse rate during sleep was helpful in management. If below 75 per minute, operation could be safely postponed in young subjects. Older people could not safely be left without operation, as cardiac failure and auricular fibrillation might come on quickly. He had been disappointed in the value of the estimation of the basal metabolic rate. It was unreliable in the young and not indicative in the old. He had found iodine of value as a diagnostic agent; in thyrotoxic cases an exacerbation occurred fourteen days after stopping the drug.

Dr. Alan Newton of Melbourne astounded the meeting by stating that he had operated on 512 patients—a number just sufficient to convince him that he knew nothing about the disease. His mortality was 0.4 per cent in his private practice and 3 per cent in the public hospital. He considered that the difference was due to the frequent changing of the nurses in the latter. Roentgen therapy had its best scope when regeneration occurred after operation.

Dr. S. F. Hansman of Sydney described the negative phosphorus and calcium balance that had been found to be associated with hyperthyroidism, possibly due to an associated hyperparathyroidism. The negative balance was not influenced by rest and iodine, but roentgen therapy had restored it to normal.

HYDATID DISEASE

Although, in Australia, knowledge of hydatid disease was second to none as there was an unrivaled opportunity for its study, observers here had still much scope for further investigation.

Prof. H. R. Dew of Sydney, who is possibly the greatest authority on hydatid disease in the world today, opened a discussion on the advances in knowledge of this disease during the twentieth century. The highest incidence was in the last decade of the nineteenth century. The Royal Australasian College of Surgeons had established a registry of hydatid disease, which should provide valuable statistical material in the future. Caution was expressed against the injudicious use of solution of formaldehyde for injecting the cyst for the purpose of sterilizing its contents. The optimal concentration of solution of formaldehyde in the cyst was 1.5 per cent.

Prof. D. W. Carmalt Jones of New Zealand discussed the life history of the Taenia echinococcus. He pointed out that a primary cyst acted as a benign tumor, producing only pressure effects, if any. It obtained its nourishment from the host, the walls being pervious, and in the early stages enough material often passed out of the cyst to sensitize the host's tissues and give a positive skin reaction. The fibrous adventitia, derived from the host, might become so thick as to starve the cyst, which then died, and the adventitia might become calcified. The record primary cyst contained 22 pints (11 liters) of fluid. If a cyst wall was injured, the life of the parasite might be preserved by the development of daughter cysts of similar structure to that of the primary cyst, probably by cystic transformation of the scolices. Such a cyst was much like a malignant tumor for the reason that it might produce untoward effects as a result of rupture. In addition to pressure effects, the two grave risks of hydatid disease were suppuration and anaphylaxis.

Dr. Keith D. Fairley of Melbourne discussed the laboratory diagnosis of hydatid disease. Eosinophilia was useful only as suggesting investigation by more specific tests. The precipitin test closely paralleled in its results the complement fixation test, but minor reactions were difficult to interpret. The complement fixation test was specific, but failure to react was of no value in excluding hydatid disease. The results were positive in only 54 per cent of preoperative tests with primary or recurrent or residual cysts. Within two or three months after operation the serum might fail to react to the test. The chief value of the test was in the diagnosis of primary suppurating or ruptured cysts and of residual recurrences. Since some

patients reacted with this test but not with the intradermal test, both should be employed in the preoperative diagnosis of primary cysts. In regard to the intradermal test, the delayed reaction should always be looked for, as occasionally a positive result might appear when the immediate reaction failed to develop. The immediate reaction was of great value in the preoperative diagnosis of primary cysts but was of no help in the diagnosis of recurrent or residual cysts. Repeated injections of the same field might sensitize the skin in this locality and lead to fallacious results. In primary preoperative cases a positive result was obtained in about 75 per cent of those with uncomplicated or degenerating and degenerated cysts. After operation the reaction was almost invariably positive and usually remained so for many years. Results showed that after the primary operation a negative result might suggest but did not prove cure, while a positive result was of no significance in the diagnosis of recurrent cysts. The high incidence of latent cysts (1.6 per cent) discovered at necropsy necessitated postmortem proof of the absence of hydatid infestation when an apparently fallacious positive result was obtained. One of the chief values of the test was in excluding hydatid infestation. In about 2,000 cases a negative response had correctly indicated the absence of hydatid disease in 95 per cent.

CARCINOMA OF THE COLON

The necessity for a defunctioned and a debacterialized colon before attempting an anastomosis, and the unsatisfactory results of a cecostomy were stressed by Dr. H. B. Devine of Melbourne in discussing carcinoma of the colon in the section of surgery. If the operative mortality rate could be lowered the disease should be eminently curable by surgery, as it did not metastasize early. The patient with carcinoma of the distal part of the colon generally came to the surgeon in the middle stage of his disease: (*a*) chronically poisoned (metabolically) from the toxic effect of a slowly growing carcinoma, (*b*) chronically poisoned from the prolonged absorption of the toxic products resulting from chronic intestinal obstruction, (*c*) with colonic tissue devitalized from the general poisoned condition and also from the local effect of the chronic intestinal obstruction, (*d*) with highly pathogenic germ content of the colon. Dr. Devine's method of operating for carcinoma of the distal part of the colon was based on the principle that, if a segment of an animal's bowel was experimentally isolated and thus deprived of its function, its bacterial content would slowly disappear. He therefore first of all disconnected the proximal from the distal part of the colon. This disconnection was made at the transverse colon if it was mobile enough; otherwise it was made at the hepatic flexure. The cut ends of the bowel were inserted into small separate openings in the abdominal wall. The distal part of the colon was thus completely "defunctioned" and time became a factor in its "debacterialization." Subsequently the growth was resected.

Dr. Victor Hurley of Melbourne said that 50 per cent of tumors were inoperable when diagnosed. There were no characteristic symptoms in the early stages, and one should be guided to the diagnosis by the association of trivial features. Upper abdominal lesions were often simulated. Examination for occult blood should always be done. Patients were often well nourished, and anemia was a late feature. Sigmoidoscopy should be done with no anesthetic and without any preparation. An opaque meal might sometimes precipitate complete obstruction.

PROSTATECTOMY

The importance of eradicating the whole of the diseased portion of the gland was stressed by Dr. A. Clifford Morson of England. Throughout the discussion the Harris method was regarded as a standard technic. Recurrence of prostatic enlargement was a demonstration of failure on the part of the surgeon who had performed the operation. By the Freyer and Thomson-Walker methods the prostatic cavity after enucleation was left bare of mucous membrane and no attempt was made to unite the bladder to the torn end of the urethra. Eventually this union occurred by what might be termed secondary intention. Harris, on the other hand, claimed that he obtained union by first intention. The difference between healing by secondary and primary union was in the amount of fibrous tissue that formed. With the introduction of the Thomson-Walker technic, stone formation had become a rare complication, but postoperative urethral obstruction still occurred.

Turning to the Harris technic, Dr. Morson said that Harris reconstructed the internal meatus. This insured more rapid healing and, by preventing urine from coming into contact with tissues uncovered by mucous membrane, reduced sepsis. The postprostatic pouch was obliterated by drawing down the base of the bladder to the level of the bed of the prostate with the aid of catgut sutures. Cysto-urethroscopy during the convalescent period showed that the new internal meatus was on the same plane as the interureteral bar. There was thus no opportunity for urine to stagnate in the region of the ureteral orifices. Because of successful hemostasis it was possible to close the bladder without suprapubic drainage. In about 50 per cent of Dr. Morson's cases there was no leakage of urine through the abdominal wall.

In the last section of his paper Dr. Morson discussed the avoidance of certain complications. He referred among other subjects to the safeguarding of the seminal vesicles. He attempted to sterilize these as well as the urethra, before enucleation was commenced, by irrigation through the proximal end of the divided vas deferens, with a 1 in 60 solution of phenol (carbolic acid).

Dr. G. H. Burnell of Adelaide had found blood urea estimations of little assistance and frequently found remarkable variations in the results of the urea concentration test. The lack of correlation between the results of these two tests had led him to discontinue blood urea estimations. He relied on the indigo carmine test, using Thomas's method. Dr. Burnell always ligated the vas and used a subcutaneous catgut suture. The Harris technic was suitable for every surgeon.

Dr. Richard Harris of Sydney discussed technic. The first incision in a two-stage operation was always a short transverse one 2 inches above the symphysis. He always used the bimanual intra-urethral method of enucleation. Visualization of the prostatic cavity with Harris's retractor was practically perfect. In the process of retrigonization the whole thickness of the trigon was pulled down. Primary closure was not an essential part of the operation, but a nicety of technic. Five hundred and forty-seven patients had now been operated on by S. H. Harris, and the mortality was still 2.7 per cent. In the estimation of renal function he relied entirely on the indigo carmine test.

SURGERY OF THE PANCREAS

The desirability of avoiding immediate operation for acute pancreatitis and the value of the urinary diastase test in diagnosis were the chief points made in a discussion on the surgery of the pancreas, in the section of surgery, opened by Dr. Harold Upcott of Hull. In regard to acute pancreatitis, he said that certain facts emerged from the experiments carried out to explain the pathology: 1. Acute edema of the pancreas followed the injection of bile into the pancreatic duct. 2. If the injection was combined with damage to the acinous cells, as by injection under pressure or by some other means, the ferments were activated and acute necrosis occurred. In a certain proportion of cases the terminal bile and pancreatic ducts were so disposed that an obstruction of the common orifice would allow the entry of bile into the pancreatic duct. It was usual to recognize three types of acute pancreatitis: hemorrhagic, gangrenous and suppurative. There was also a milder inflammation, which had been described as acute pancreatic edema. Passing to consideration of the chronic dis-

orders, the principal difficulty in diagnosis, he thought, was the distinction between chronic pancreatitis and cancer of the pancreas. Even at operation it was not always easy to decide. The surgical treatment of chronic pancreatitis was essentially drainage of the biliary system, either by establishing a temporary external fistula from the gallbladder or common duct or by diverting the bile from the gallbladder into the stomach or the duodenum. He classified pancreatic cysts into four groups: (1) retention or canalicular cysts, (2) neoplastic cysts, (3) pseudocysts, (4) parasitic cysts. Malignant disease of the pancreas was almost always carcinoma. If the diagnosis was confirmed at operation, the simplest method of diverting the bile should be practiced. Dr. Upcott concluded by referring to disturbances resulting from alteration in the internal secretion. In regard to increased secretion, he described the symptoms of the hypoglycemic state and pointed out that, if all the other causes of the hypoglycemic state could be reasonably dismissed, it appeared justifiable to advise exploration of the pancreas; for in no other way could the presence of an adenoma of the cells of Langerhans be determined.

OBESITY

Dealing with the endocrine aspect, Sir James Purves Stewart of London in the section of medicine classified obesity into: 1. Pineal obesity, which occurred in patients with pineal tumor; but in all such instances pressure occurred on adjacent organs or produced internal hydrocephalus. 2. Hyperinsulinism; such persons were frequently fat rather than thin. 3. Genital: eunuchism in the male and menopausal obesity in the female. 4. Adrenal, especially in nondestructive tumors of the gland in women and associated with involution of the uterus and adnexa. 5. Subthyroid, to be diagnosed only when the classic features of obesity were found. 6. Subpituitary, constituting the commonest form of all, and due to a deficiency of the secretion of the basophil cells, which were found in the anterior lobe of the gland and sometimes in the posterior lobe. Obesity with dwarfism occurred when the deficiency also affected the acidophil cells of the anterior lobe. The Fröhlich syndrome was frequently seen in children with sellar and suprasellar tumors showing characteristic pressure syndromes. Grave doubts existed as to whether this obesity was purely endocrine in origin. It was probably rather neuro-endocrine, as, for example, in the obesity of internal hydrocephalus causing compression of the infundibular stalk. 7. The Cushing syndrome, due to suprapituitarism of the basophil cells of the anterior pituitary, which was not entirely a secretory disorder. It was frequently associated with the characteristic sign of hyperadrenalism, hyperparathyroidism and ovarian deficiency.

Dr. J. H. Anderson of Ruthin Castle warned against reduction of diet in true hypothyroidism, as the patients stood it badly. In genital obesity, diet, exercise and thyroid gave the best results, and the same three measures were necessary in pituitary obesity, with the addition of whole gland pituitary extract. Drugs, especially thyroid, were controlled by estimating the basal metabolic rate and the tolerance to sugar, and by keeping a watch on the pulse rate.

Prof. C. G. Lambie of Sydney took an accountant's view of the situation. On the debit side of an energy balance table there was expenditure of calories: (*a*) for basal metabolism, which consumed by far the largest amount of heat; (*b*) by exercise, which required relatively few calories, and (*c*) specific dynamic action, the technical measurement of which in man was difficult. The last mentioned represented the smallest fraction and was mostly decreased in obesity. Food constituted the credit side of the balance and was the most important single variable factor. If the energy intake was less than the energy consumption there would be a loss of energy building tissue; otherwise the laws of conservation of energy and mass would be contravened. This was the basis of all rational treatment. The important problem in obesity was what happened to food taken in excess of caloric requirements. Five possibilities arose, any of which might be responsible for the development of obesity: limitation of absorption, elimination, increased mechanical work, combustion (luxus consumption) and storage. Energy consumption was determined not by a supply of energy but by the margin of tissues, any excess of intake over requirement being stored chiefly as fat. This being true, any continued excess, even if slight, of intake over requirement would eventually result in obesity. In general, body weight might nevertheless remain remarkably constant. Big eaters who led a sedentary life free from worry and with plenty of sleep failed to increase in weight, while others of similar age, sex and height who took only a fraction of the amount of food and led an active life became fatter. The first group were said to have a high luxus consumption. It made no difference from the point of view of energy whether the luxus consumption was high from increased burning of food or from entry storage. Diminished burning of food was frequently associated with a low basal metabolic rate, but increased storage occurred in the majority with a normal rate of metabolism. This storage was apparently due to increased conservation of carbohydrate and of the fat. Glycogen synthesis was apparently linked with this process, while practically all forms of obesity were associated with an increased glycogen formation and not a mere accumulation, as occurred in von Gierke's description. This conception brought endocrine and nervous obesity into line with nutritional obesity. Endocrine obesity was roughly divisible into two groups: one with a high sugar tolerance and the other with a low sugar tolerance.

THE DIFFERENTIAL DIAGNOSIS AND TREATMENT OF SEVERE ANEMIA

As a working classification, Dr. J. C. Matthews of Downton, England, adopted: 1. Pernicious anemia. 2. Idiopathic hypochromic anemia. 3. Other deficiency anemias; for example, scurvy, myxedema. 4. Anemias characterized by hemolysis —acholuric jaundice, anemias due to chemical poisons, and so on. 5. Anemias secondary to (*a*) malignant disease, especially of the alimentary tract; (*b*) infections; (*c*) hemorrhage, acute and chronic. 6. Aplastic anemia. 7. Splenic anemia.

Dr. Gunaratnam Cooke of Ceylon said that the chief anemias in his country were associated with hookworm infestation, in the course of which the blood picture sometimes changed from the secondary to the primary type. He had found combined treatment with liver and iron to be valuable. He stated that the complex terminology of the modern hematologist was most confusing to his countrymen, and he himself was content to call pernicious anemia "large red cell anemia."

DIABETIC GANGRENE

That disordered fat metabolism associated with an excess of blood cholesterol was the most important factor in the causation of diabetic arteriosclerosis was the contention of Dr. A. Clarke Begg of Swansea, England. Diabetic gangrene was due to arteriosclerosis, increased susceptibility to sepsis, and diabetic neuritis. Amputation was the best course in wet spreading gangrene but conservative measures were indicated in dry gangrene. In the borderline case a good general rule was to abandon conservative treatment after four weeks if improvement did not manifest itself. Prophylaxis against gangrene was of the greatest importance.

Other speakers stressed the necessity for weak alcoholic antiseptics, including 2 per cent iodine. As a means of estimating the degree of arterial obstruction, the Pachon oscillometer was recommended.

FAMILIAL ACHOLURIC JAUNDICE

Once the diagnosis was made, splenectomy should not be long delayed, on account of the danger of fatal hemolytic crises, and the operative difficulties in older subjects.

Dr. S. O. Cowen presented the histories of thirty-three patients, of whom seventeen were in one "family." Twenty of the thirty-three had been treated by splenectomy with no deaths. Ulceration of the legs, a common complication, had not recurred after operation.

GALLOP RHYTHM

It is important to distinguish between presystolic and protodiastolic gallop, since the former is a sign of grave significance and the latter is compatible with perfect health. Dr. Crighton Bramwell of Manchester stated that protodiastolic gallop was due to accentuation of the physiologic third heart sound. It could be distinguished from presystolic gallop by the absence of any associated palpable impulse and by the unequal spacing of the sound. An accentuated third heart sound was generally audible in mitral stenosis, but presystolic gallop never developed in patients with this lesion, probably because auricular fibrillation intervened first. To appreciate gallop rhythm best, direct auscultation of the chest wall without a stethoscope allowed the double impulse to be appreciated as well as the double sound. The impulse itself was felt just to the left of the xiphisternum.

CESAREAN SECTION

In no uncertain terms, Dr. J. Bright Banister of London decried the modern popularity of the operation of cesarean section. The best mortality rate was 5.8 per cent. In his series of 3,846 cases the rate was 6.6 per cent. As the gross maternal mortality rate for England and Wales was 0.45 per cent, the operation had a considerably increased mortality. Dr. Banister expressed the profound conviction that the operation was performed with undue frequency because of the tendency to regard obstetric problems from a surgical point of view. "Let the baby out," said the surgically wise but obstetrically foolish. Such counsel implied a contempt for nature, with its painful but safe technic. In alleged cases of pelvic disproportion section was performed without enlisting the aid of nature at all, or only after a mock trial of natural methods and in apparent ignorance of the fundamental facts of the mechanisms of labor. A second factor making for the undue increase in the number of cesarean sections was the inability of some obstetricians, deficient in practical training, to diagnose by examination the cause of delay in labor.

Prof. J. B. Dawson of Dunedin crossed swords with Dr. Banister and drew attention to the obvious fallacy in his statistical statement. Professor Dawson considered that the danger in British countries today was not that too many sections were being done but that too many were being done too late. The disasters did not follow prompt decisive action but operations performed after long delay, begotten by hesitation out of hope, a delay that added a terrific risk to subsequent operations.

Dr. W. Ivon Hayes of Melbourne quoted the cesarean incidence at the Women's Hospital as 0.8 per cent, with a mortality of 6 per cent. These figures covered fifteen years and a total of 43,727 deliveries. The highest death rates were in eclampsia (21 per cent) and accidental hemorrhage (21 per cent). It was considered that the indications were confined to (1) any degree of placenta praevia in a primipara not in labor, (2) any central placenta praevia, (3) any degree of placenta praevia when the child was a "good risk" and specially desired, and (4) gross disproportion. Fatalities tended to occur in the patients operated on late in labor. Lower segment cesarean section had so many advantages that it should become the regular method of abdominal delivery among obstetric surgeons. Hysterectomy was indicated when the patient showed signs of definite infection and when the membranes had been ruptured a considerable time, or when there had been a history of repeated examinations or repeated attempts at delivery.

BELGIUM

(From Our Regular Correspondent)

Sept. 21, 1935.

The Health Record Book

The Fédération médicale belge created recently the health record book, with the endorsement of the Conseil supérieur d'hygiène publique. This record book, designed for distribution by the physician in all the families, is well gotten up and will centralize all the information concerning the state of health of each member of the family. The creation of a health record book is the most practicable and the most effective method of promoting preventive medicine. The family physician, medical specialists, the army medical corps and certain other official services will have access to the health record book, which will be edited in such a manner that the uninitiated will be unable to understand the recorded diagnoses. This last point is of great importance, for in this manner professional secrecy will be safeguarded. Twenty-five years ago the use of the health record book was recommended in France, but with the difference that any one was able, by inspection of the book, to learn the state of health of the owner. It is to be hoped that many physicians and organizations of social medicine will support this innovation of the Fédération médicale belge, which, as time goes on, will become of ever increasing value.

The Medical Profession in Belgium

The economic crisis is still felt by the physicians of Belgium, particularly in certain large centers. The Belgian universities are nevertheless creating many new physicians every year. The question has been raised as to how this mounting flood can be checked. Various methods have been proposed, notably the creation of an entrance examination at the universities and the introduction of more rigorous term and final examinations.

The plethora of physicians is the cause for the excessive reductions in the medical tariffs, which leads to the remark that, in present-day society, the physician does not occupy the place to which he is entitled by reason of his extensive studies and the services that he renders humanity. The pharmacists and the nurses in exceeding their rights, the numerous societies of a prophylactic character, the provincial and communal hospitals and clinics, the mutual aid societies by their exploitations, the law pertaining to industrial accidents, and the inroads of charlatanism, bear a large share of responsibility for the prevailing conditions among the physicians.

The Fédération médicale belge has sought means of remedying this state of affairs. It has recommended as indispensable a closer union of all physicians and the creation of a sort of corporation with its code of ethics and its regulations, in order to combat all the trends that have a tendency to lessen the prestige of the medical profession. The federation has now become more insistent and demands the immediate creation of an "order," or ethical council, of physicians; it recommends, with regard to industrial accidents, the organization of a service of nation-wide scope, which would be placed at the disposal of the insurance companies; it has succeeded in getting the mutual aid societies to accept the principle of control of the medical features of the mutual aid societies by the medical syndicates; finally, a health insurance society is about to be organized. The Fédération médicale belge has the firm conviction that, if only the physicians will remain united, a better future is assured.

The Industrial Medical Service

After the close of the World War, the industrial medical service was reorganized on the following bases:

1. The industrial medical service is entirely distinct from the inspection of labor properly so called, and its jurisdiction extends to all places where workmen are engaged. As regards the "right to visit," the authority of the medical inspectors of labor

is absolute. They are subject only to the instructions furnished by the chief of the medical inspection service.

2. The duties of the industrial medical service have been interpreted as follows: (*a*) to organize the protection of pregnant women and nurses gainfully employed; (*b*) to assure the sanitary safety of apprentices and to collaborate in their proper professional organization; (*c*) to study the physiology and the pathology of labor; (*d*) to bring the knowledge of its agents in special fields to the aid of all organizations dealing with social insurance; (*e*) to propagate the most useful ideas of professional prophylaxis, and (*f*) to control the enforcement of regulations of a medical nature.

At present the medical inspectors of labor, to the number of ten, carry out themselves the necessary inspection. To these should be added a woman inspector who is a graduate in medicine, and an inspector who is a doctor of science, for the inspection of laboratories.

To watch over the laws for the protection of the health of industrial workers, and the regulations of professional hygiene, in their applications, their enforcement, their amplifications and their possible improvement—that is, to sum up, the proper domain of industrial inspection.

In the performance of their duties, the inspectors have the right (1) to enter by day or by night the establishments under their supervision, (2) to issue, on the basis of their inspections, official reports receivable in courts of justice until proof of the contrary has been submitted, and (3) to propose to local authorities the closing of a plant by reason of manifest unhygienic conditions.

By reason of a vast collection of objective documents on the subject in hand, the industrial inspectors can now count on the aid of legislators in enforcing respect for the fundamental principles of industrial protection. In this connection a list of royal and ministerial decrees looking toward the health of workers and the hygienic aspects of wage scales has been promulgated.

Although the officers of the industrial medical service have a definite mission to perform and have not available as large a staff of investigators as they might desire, they nevertheless find opportunity to conduct special medical researches on saturnism, hydrargyrism, anthrax, ancylostomiasis and kindred subjects.

An Ovation to the Surgeon Albin Lambotte

Special ceremonies in honor of the surgeon Albin Lambotte, whose work in the field of osteosynthesis is well known, were held recently in Antwerp. Most of the Belgian surgeons and several foreign surgeons came on this occasion to express to Lambotte their admiration. The first feature of the occasion was the formal reception of Dr. Lambotte, in the beautiful surroundings of the Hotel de Ville at Antwerp, by the board of aldermen and the burgomaster Huysmans, who expressed to him the gratitude of the city for the eminent services rendered to the wounded and the sick and for the luster that his works had brought to his city.

In the afternoon an academic session was held at the Université coloniale, at which W. Franck, secretary of state, presided. Professor Hustin of Brussels eulogized the work of Dr. Lambotte, following which Professor Sauerbruch of Berlin gave an address on the history of bone surgery, while Professor Leriche of Strasbourg outlined the future of bone surgery. In conclusion, the decoration of Commander of the Order of Leopold was conferred on Dr. Lambotte.

In the evening the University of Brussels, at which institution Lambotte formerly studied and of which he is doctor honoris causa, gave him a banquet, following which the secretary of state, the president of the university, and representatives of the Société nationale de chirurgie de Paris, the Société des chirurgiens de Paris, and the Société belge de chirurgie de Paris, presented their felicitations to the eminent surgeon.

Marriages

RAYMOND O. FRANKOW, West Bend, Wis., to Miss Elinor Turrish of Stevens Point in Fond du Lac, September 3.

GEORGE M. GREEN, Daytona Beach, Fla., to Miss Margaret Dunn of Lancaster, Pa., in Jacksonville, September 1.

MAURICE JULIAN ROTKOW, Des Moines, Iowa, to Miss Johanna Raskin of Savannah, Ga., September 24.

WILLIAM H. STUDLEY, Shorewood, Wis., to Mrs. Doherty A. Spofford of New York, September 14.

ROBERT A. GILREATH, Hendersonville, N. C., to Miss Marie E. Hench of Defiance, Ohio, in August.

GLEN LUKE YATES, Belleville, N. J., to Miss Frances Sinclair Backs of Glen Ridge, September 7.

GUSTAVE A. ROY to Miss Gertrude R. Fearon, both of Kansas City, Mo., September 20.

FRANK READ HOPKINS to Miss Nancy Scott Adams, both of Lynchburg, Va., September 14.

PAUL HOGG, New York, to Miss Dorothy Elizabeth Williams of Norfolk, September 21.

EUGENE E. POLGAR, Bethlehem, Pa., to Miss Anna Munchak of Scranton, September 7.

Deaths

Bundy Allen ⊕ Tampa, Fla.; St. Louis College of Physicians and Surgeons, 1912; member of the House of Delegates of the American Medical Association, 1930-1932 and 1935; member of the American Roentgen Ray Society and the American College of Radiology; member and past president of the Radiological Society of North America; on the staff of the Centro Asturiano Hospital; aged 50; was killed, November 25, in an automobile accident.

John Morse Rehfisch ⊕ San Francisco; University of California Medical School, San Francisco, 1915; member of the Radiological Society of North America; formerly assistant clinical professor of medicine (radiology), Stanford University School of Medicine; assistant pathologist at his alma mater, 1915-1917, and instructor in medicine, 1919-1923; aged 42; died, September 18, of aortic and mitral stenosis and myocardial hypertrophy.

Pierre Zéphyr Rhéaume, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, 1900; professor of operative surgery, University of Montreal Faculty of Medicine; fellow of the American College of Surgeons; served with the Canadian Army during the World War; surgeon in chief to St. Luke's Hospital; aged 58; died, September 18.

William Collins Pumpelly, Fort Pierce, Fla.; College of Physicians and Surgeons, Baltimore, 1903; member of the Florida Medical Association; veteran of the Spanish-American and World wars; at one time professor of pharmacology, chemistry and botany, College of Pharmacy, Mercer University, Macon, Ga.; aged 58; died, September 18.

Cyrus Ulysses Johnson, West Berkshire, Vt.; University of Vermont College of Medicine, Burlington, 1888; member of the Vermont State Medical Society; past president of the Franklin County Medical Society; member of the state legislature; aged 72; died, October 14, in St. Albans (Vt.) Hospital, of cerebral hemorrhage.

Joseph Abel Thibodeau ⊕ Rumford, Maine; College of Physicians and Surgeons, Boston, 1912; member of the New England Society of Psychiatry; past president of the Oxford County Medical Society; aged 51; on the staff of the Rumford Community Hospital, where he died, September 17, of subarachnoid hemorrhage.

Theophilus Erskine Ross ⊕ Hattiesburg, Miss.; College of Physicians and Surgeons, Baltimore, 1888; in 1928 member of the House of Delegates of the American Medical Association; past president of the Mississippi State Medical Association; fellow of the American College of Surgeons; aged 71; died, September 29.

Dell Ewing Graham ⊕ Ottumwa, Iowa; State University of Iowa College of Medicine, Iowa City, 1902; fellow of the American College of Surgeons; aged 58; on the staffs of the City Hospital and St. Joseph's Hospital, where he died, September 22, of malignant hypertension and cerebral hemorrhage.

Ernst Phillip Raab, Belleville, Ill.; University of Pennsylvania Department of Medicine, Philadelphia, 1881; member of

the Illinois State Medical Society; formerly president of the school board and library board; on the staff of St. Elizabeth's Hospital; aged 75; died, September 21, of heart disease.

Patrick Joseph Ryan, Hartford, Conn.; University of Buffalo (N. Y.) School of Medicine, 1899; member of the Connecticut State Medical Society; aged 70; for many years on the staff of St. Francis Hospital, where he died, September 29, of suppurative appendicitis and peritonitis.

John Lear, Trexlertown, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1889; member of the Medical Society of the State of Pennsylvania; at one time head of the department of biology, Muhlenberg College, Allentown; aged 76; died, October 7, of chronic myocarditis.

Charles David Carter, De Kalb, Ill.; Rush Medical College, Chicago, 1883; member of the Illinois State Medical Society; past president of the De Kalb County Medical Society; on the staff of St. Mary's Hospital; aged 75; died, November 14, of chronic nephritis and uremia.

Frank A. Rich, Burlington, Vt.; University of Vermont College of Medicine, Burlington, 1893; member of the Vermont State Medical Society; formerly professor of veterinary science at his alma mater; aged 74; died, September 25, of pulmonary hemorrhage and chronic bronchiectasis.

Harry Alexander Lindsay ⊕ Sidney, Ohio; State University of Iowa College of Medicine, Iowa City, 1906; served during the World War; aged 63; on the staff of the Wilson Memorial Hospital, where he died, in September, of a self-inflicted bullet wound.

Conrade Alleyne Howell, Columbus, Ohio; Homeopathic Hospital College, Cleveland, 1888; Ohio Medical University, Columbus, 1901; fellow of the American College of Surgeons; served during the World War; aged 68; died, September 21, of pneumonia.

J. Frank Small, York, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1889; member of the Medical Society of the State of Pennsylvania; director of public health of York; aged 70; died, October 20, of coronary thrombosis.

Hugh Ferguson Parrish, Portsmouth, Va.; University of Vermont College of Medicine, Burlington, 1893; Bellevue Hospital Medical College, New York, 1895; member of the city council; aged 63; died, October 7, probably of angina pectoris.

William Lewis MacDonald, Boston; Harvard University Medical School, Boston, 1865; member of the Massachusetts Medical Society; formerly a dentist; aged 101; died, September 24, in Malden, of arteriosclerosis and chronic myocarditis.

Francis A. Graham ⊕ Lincoln, Neb.; Omaha Medical College, 1889; for eight years county coroner; member of the county insanity board; for many years on the staff of St. Elizabeth's Hospital; aged 73; died, October 31, of septicemia.

Lloyd Edmund McFarlane, Manhattan, Kan.; University of Minnesota Medical School, Minneapolis, 1921; member of the Kansas Medical Society; aged 39; died, September 26, in Rochester, Minn., of jejunal ulcer and bronchopneumonia.

James Allen Shackelford, Ranger, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1912; member of the State Medical Association of Texas; aged 48; died, September 21, of coronary occlusion.

Friend Palmer, Cerrillos, N. M.; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1887; aged 73; died, September 24, in Albuquerque, N. M., of chronic myocarditis.

Perry Harris Munger, St. Paul Park, Minn.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1889; aged 74; died, September 8, in Stillwater, of cerebral arteriosclerosis and kidney disease.

Charles Edward Greenfield, Chicago; Rush Medical College, Chicago, 1886; member of the Illinois State Medical Society; aged 75; died, November 3, in the Presbyterian Hospital, of bronchopneumonia.

Edwin Sheridan Day, Earlham, Iowa; College of Physicians and Surgeons of Chicago, 1894; aged 66; died, September 17, at the Iowa Methodist Hospital, Des Moines, of hypertensive heart disease.

Charles Albert Macrum, Portland, Ore.; University of Michigan Homeopathic Medical School, Ann Arbor, 1889; aged 73; died, September 7, in the Good Samaritan Hospital, of lobar pneumonia.

Fred Walter Murrey, Caldwell, Ohio; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1900; president of the board of education; aged 62; died, September 15, of tuberculosis.

Taylor Rice Jackson ⊕ Chariton, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1897; aged 65; died, September 12, of septic sore throat.

Evert Harwood Ostling ⊕ Lewellen, Neb.; State University of Iowa College of Medicine, Iowa City, 1919; aged 42; died, September 28, in the Good Samaritan Hospital, Columbus, of septicemia.

Christopher George Lehman, Detroit; Michigan College of Medicine and Surgery, Detroit, 1901; member of the Michigan State Medical Society; aged 63; died, September 27, of encephalitis.

Edward S. Meers, Kenosha, Wis.; Yale University School of Medicine, New Haven, Conn., 1874; aged 84; died, September 17, of cerebral hemorrhage, chronic nephritis and chronic myocarditis.

Edward William Jackson, Rochester, N. Y.; Albany Medical College, 1907; fellow of the American College of Physicians; aged 58; died, October 2, in Williamson, of cerebral thrombosis.

Roy Colony Alt, Cedar Rapids, Iowa; Jefferson Medical College of Philadelphia, 1913; member of the Iowa State Medical Society; aged 48; died, September 10, of myelogenous leukemia.

Emily L. Hill, Gloversville, N. Y.; Hahnemann Medical College and Hospital, Chicago, 1894; aged 74; died, September 22, of hyperthyroidism and valvular heart disease.

Lawrence S. Pearce, Falkner, Miss.; University of Louisville (Ky.) Medical Department, 1875; Confederate veteran; aged 88; died, September 18, of hypostatic pneumonia.

Asher Franklin Snyder ⊕ Mount Joy, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1908; aged 50; died, October 5, of coronary thrombosis.

Robert John Trimble, Queenston, Ont., Canada; University of Toronto Faculty of Medicine, 1875; L.R.C.S., L.R.C.P., Edinburgh, 1876; aged 86; died, September 16.

George F. Sheedy, New York; Yale University School of Medicine, New Haven, Conn., 1902; aged 58; died, October 13, in St. Luke's Hospital, of gastric ulcer.

Howard Gillespie Myers ⊕ New York; Bellevue Hospital Medical College, New York, 1887; aged 73; died, September 12, in Wilton, Conn., of arteriosclerosis.

William James Pearce, Dodgeville, Wis.; Rush Medical College, Chicago, 1881; aged 78; died suddenly, September 24, probably of heart disease.

James Albert Snapp ⊕ Goshen, Ind.; Detroit College of Medicine, 1891; aged 70; died, September 28, of cerebral hemorrhage and arteriosclerosis.

James Alfred Maloney, Chicago; Temple University School of Medicine, Philadelphia, 1910; aged 49; died, August 27, of chronic myocarditis.

Simon Samuel Albert Miller, Chicago; New Orleans University Medical College, 1900; aged 61; died, August 20, of chronic myocarditis.

Robert Moorhead Neilson, St. Jerome, Que., Canada; Laval University Faculty of Medicine, Quebec, 1915; aged 45; died, September 27.

Lester Samuel Lang ⊕ Oneonta, N. Y.; Syracuse University College of Medicine, 1907; aged 56; died, September 24, of angina pectoris.

Nathan Farmer Davis, Chandler, Ariz.; Curtis Physio-Medical Institute, Marion, 1897; aged 81; died, September 26, of arteriosclerosis.

William Abraham Groves, Fergus, Ont., Canada; University of Toronto Faculty of Medicine, 1903; aged 58; died, September 26.

Alfred Roscoe Andrews, Auburn, N. S., Canada; Halifax Medical College, Halifax, N. S., Canada, 1879; aged 76; died in September.

Alexander Chittick, Peoria, Ill.; National Medical University, Chicago, 1904; aged 62; died, October 9, of cerebral hemorrhage.

Jonathan W. Lewis, Driggs, Ark. (licensed in Arkansas in 1903); aged 84; died, August 8, of uremia and heart disease.

Robert Jesse Teeter, Waterford, Ont., Canada; Trinity Medical College, Toronto, 1893; aged 67; died, September 14.

Frederick F. Kitzing, Chicago; Rush Medical College, Chicago, 1905; aged 56; died, July 18, of cerebral hemorrhage.

Charles Mackay, Seaforth, Ont., Canada; Trinity Medical College, Toronto, 1891; aged 73; died, October 16.

Bureau of Investigation

MORE NOSTRUMS IN RETROSPECT

Condensed Reports on "Patent Medicines" Previously Dealt With in Greater Detail

Some months ago there were published in this department of THE JOURNAL greatly condensed reports of much longer and detailed articles published previously on several widely-advertised "patent medicines." The material that follows gives in brief form statements regarding additional products that have already been dealt with in the past more extensively:

Laxative Bromo Quinine.—Many years ago this product was advertised under the claims that it "cures a cold in one day." The preparation was the subject of an article in this department of THE JOURNAL, Nov. 27, 1915. At that time it was reported that the A. M. A. Chemical Laboratory had found that each tablet of Laxative Bromo Quinine contained as its essential ingredients 2 grains of acetphenetidin, ⅕ grain of caffeine, ⅖ grain of quinine or cinchona alkaloids with aloes or aloin as a laxative. It was brought out in the article that while the name Bromo Quinine gives the impression that bromine and quinine were the important ingredients, analysis disclosed that the bromide content was only 1/200 of the whole, corresponding to about 1/30 of a grain of potassium bromide or 1/500 part of a Pharmacopeial dose. The article also stated that the formula for the preparation had apparently changed about the time the National Food and Drugs Act went into effect. An analysis made for the American Medical Association in 1905 indicated that in addition to the laxative principle, the tablets contained acetanilide, quinine sulphate and caffeine, but no trace of bromine. An analysis made by the state chemists of North Dakota and published in 1907 also failed to show the presence of bromine. The Federal Trade Commission in June 1935 reported that the Grove Laboratories, Inc., of St. Louis, exploiters of Grove's Laxative Bromo Quinine Tablets, had entered into a stipulation with the Commission to cease claiming that its nostrum "is a cold remedy." Yet an advertisement that appeared in the Chicago *Tribune* Nov. 7, 1935, read in part as follows: "KILL THAT COLD! Don't Merely Coddle It with Half-Way Measures! A cold is nothing to trifle with! It may end seriously. A cold, being an internal infection, calls for an internal treatment. It also calls for a COLD preparation and not something good for a number of other things as well. Grove's Laxative Bromo Quinine is what a cold requires. It is expressly a cold tablet. . . ." The 1935 trade package declares—as the law requires—that each Laxative Bromo Quinine tablet contains one grain of *acetanilide!* It thus appears that the most powerful drug in the nostrum has always been a heart-depressing coal-tar product: First acetanilide, then acetphenetidin (phenacetine) and now again acetanilide.

Murine.—Before the passage of the Food and Drugs Act, the "eye remedy" Murine was described on the trade package as "a *positive cure* for sore eyes . . .," etc. Following the passage of the law, Murine became "a *reliable relief* for sore eyes . . .," etc. In the earlier days the exploiters of Murine also conducted a school of spectacle fitting known as the Northern Illinois College of Ophthalmology and Otology. It conferred at least seven "degrees" and issued ornate "diplomas" that, according to the "college" catalog, would "frame handsomely 28 x 28 inches." Twenty-seven years ago (November 1908) there was published in this department of THE JOURNAL an extensive article on Murine and its method of exploitation. Considerable information was given regarding the alleged college operated by those who were interested in Murine. In this article there were given the results of an analysis made in the Chemical Laboratory of the American Medical Association. From their examination, the Association's chemists concluded that Murine was essentially a water solution of borax (about 12 grains to the fluid ounce) containing a trace of berberine or some golden seal preparation. At that time the manufacturers of Murine made no pretense of giving information regarding the composition of their product. About 1922, however, when a seeming frankness was the order of the day in the "patent medicine" business, the Murine carton listed what were said to be the "ingredients used in the compounding of Murine." According to the cartons at that time, these ingredients were: Geranium Maculatum [Cranesbill]; C. P. Boracic Acid; Berberine Hydrochlorid; Podophyllum Peltatum [May-apple]; Pilocarpus [Jaborandi]; Chloramine-T; Rhubarb; Glycerine; Potassium Sesquicarbonate; Distilled Water; Xanthoxylum [Prickly-ash]. In a reprint of the Murine article published in the 1923 edition of the pamphlet "Miscellaneous Nostrums," prepared and issued by the Bureau of Investigation, attention was called to two facts: first, that if chloramine-T were present in Murine in 1923, the formula had obviously been changed, for chloramine-T was not introduced into medicine until 1916; second, that chloramine-T, although declared as one of the ingredients used in making Murine, was not even found in the 1923 preparation! In fact chemists would not have expected to find it, as chloramine-T is incompatible with boric acid. The present (1935) cartons of Murine no longer carry on them the alleged list of ingredients.

Western Medical Corporation.—This is one of a number of medical mail-order concerns operating from the same address and putting out a number of nostrums. Under its earlier name, Western Medical Association, it was the subject of an article in this department of THE JOURNAL Jan. 28, 1922, and again the subject of a later article under its present name Aug. 5, 1933. The name of Harry L. James, M.D., has been played up as the "Directing Physician." This man was reported to be vice-president of the corporation. Part of the advertising ballyhoo has been a six-page puff of Harry L. James, written by Harry L. James. While the advertising might lead the public to believe that James is peculiarly well qualified to treat cases of epilepsy, he is quite unknown to scientific medicine in this field. The analysis made of the so-called treatment put out by the concern when it was known as the Western Medical Association showed its essential ingredient to be phenobarbital (luminal). There were also some so-called digestive tablets and a laxative.

Nurito.—This "patent medicine" was first dealt with in this department of THE JOURNAL of Aug. 10, 1912. It was analyzed at that time in the A. M. A. Chemical Laboratory and was found to consist of milk sugar, phenolphthalein and amidopyrine (pyramidon). In August 1914 the Food and Drug Administration issued a Notice of Judgment (No. 2997) in which it was declared that Nurito had been found misbranded in violation of the National Food and Drugs Act. They reported at the time that the federal chemists found both amidopyrine and milk sugar in Nurito, but no statement was made regarding the presence of phenolphthalein. In 1927 a Chicago daily newspaper was offered the Nurito advertisement. The advertising department of the paper, in asking the Bureau of Investigation for information on Nurito, stated that a representative of the concern that put out Nurito had declared that amidopyrine (pyramidon) had been removed from Nurito and that the "patent medicine" at that time contained aspirin, phenolphthalein, colchicin salicylate, caffeine and milk sugar. No amounts were stated. Whether this represents the essential ingredients in Nurito today, we do not know. In May 1934 the Federal Trade Commission reported that it had directed the Nurito Company of Chicago to discontinue representing the efficacy of its product Nurito as a treatment for neuritis, rheumatism, neuralgia, sciatica and lumbago. The Commission added that Nurito would be a dangerous product to use in some cases and that certain ingredients were likely to produce toxic effects.

Min-amin.—This was the subject of an extended article published by the Bureau of Investigation in THE JOURNAL, Jan. 26, 1935. It was brought out in the article that no information was given on or in the trade package (which is all that is subject to the requirements of the National Food and Drugs Act) regarding the composition, other than the vague statement that it was "a combination of pure food concentrates containing minerals and vitamins." A booklet sent out by those who sold Min-amin stated that the product contained 21.85 per cent protein, 14.4 per cent crude fat, 54.05 per cent carbohydrates, 0.8 per cent crude fiber, and 3 per cent ash. The booklet stated, also, that the fuel value of a teaspoonful of Min-amin was 41.84 calories. A report from the A. M. A. Chemical Labora-

tory was given in some detail and the chemists expressed the opinion that Min-amin was essentially powdered wheat germ. The instructions that went with Min-amin were, in effect, that the obese should eat no breakfast and no luncheon, but take instead of each of these meals a rounded teaspoonful of Min-amin in an eight-ounce glass of freshly-made, unstrained orange juice. THE JOURNAL'S article closed with the statement that there seemed to be nothing novel or original in Min-amin and that other food powders had appeared on the market in the past year or two recommended in the treatment of obesity as substitutes for breakfast and luncheon.

Correspondence

IMPEDANCE ANGLE TEST FOR THYROTOXICOSIS

To the Editor:—In 1933 one of us (M. G. W.) published a paper on the polarization capacity of the skin as an index of thyroid function (*Endocrinology* **17**:299 [May-June] 1933). Three months later there appeared a paper by Dr. M. A. B. Brazier (*Lancet* **2**:742 [Sept. 30] 1933) dealing with the same subject but designating the method as measuring the impedance angle. In THE JOURNAL, October 12, page 1211, in reply to a query on the impedance angle test for thyrotoxicosis, you state that "American workers fail to corroborate the English observations." This statement requires correction. In the paper published in *Endocrinology* calling the method a polarization capacity, the results substantially agree with those of Dr. Brazier with the following difference: While the polarization capacity as well as the impedance angle was found to be high in thyrotoxicosis, we found that the polarization capacity was not correlated with the basal metabolic rate. Dr. Brazier, on the other hand, finds that the impedance angle can be correlated with the basal metabolic rate. Be that as it may, it is important to point out the fact that the measurements made by Dr. Brazier and ourselves express the same basic phenomenon.

On reading over the various articles dealing with the subject, one may be led to believe that different quantities were being measured by the different workers (Lueg, Grassheim, Wohl, Brazier) since one worker says he is measuring the impedance angle while another worker says he is measuring the polarization capacity of the skin. All the measurements were concerned with the impedance of the human body to an alternating current. To be sure they used different frequencies of current and somewhat different technics as well as different apparatus, which would certainly be apt to give results not in general agreement; but the quantities measured in every case were closely related to the impedance of the body to the alternating current passed through the body.

In any circuit carrying an alternating current there are three fundamental quantities involved; namely, a pure resistance, a reactance due to the capacitance of the circuit, and a reactance due to any inductance in the circuit. No circuit carrying an alternating current is entirely free of any of these quantities, but it is true that circuits are made in which either the reactance due to the capacitance or to the inductance are made negligibly small and can therefore be neglected. We believe that all the workers interested in this problem have implied that the inductance was negligible, since they have all omitted it from their considerations. We believe they are justified in taking this point of view. Hence the circuit contains only the two remaining quantities, and we have for the total impedance of the circuit:

$$\Sigma = \sqrt{R^2 + \left(\frac{1}{Cw}\right)^2}$$

R = pure resistance
C = capacity
w = 2π times the frequency

Now since the currents used were harmonic functions of the time, the pure resistance and the reactance due to the capacitance can be plotted graphically and added as vector quantities. The total impedance is then the vector sum of the two quantities, and the impedance angle is the angle between the total impedance vector and the resistance vector. It should be stated here that these quantities are not really vector quantities but can be treated as such when the impressed electromotive forces are harmonic. To determine the impedance angle in a circuit containing only resistance and capacitance, one must measure the capacitance that must be inserted into the circuit in order to bring the current in phase with the voltage. This is exactly what all the workers have done and hence they have all been measuring the same basic phenomena. They do express different points of view as to the causes of the capacity of the body, but as to the merits of these points of view they are yet to be determined.

MICHAEL G. WOHL, M.D.
Associate Professor of Medicine, Temple University Medical School.

ROSCOE STINETORF, PH.D.
Member of Department of Physics, University of Pennsylvania. Philadelphia.

To the Editor:—Regarding the communication from Dr. Killoran on the impedance angle test for thyrotoxicosis, which appeared in Queries and Minor Notes in the issue of October 12, I note that in your answer no reference was made to a publication by Wilson and myself in the *Lancet,* showing that no correlation existed between the basal metabolic rate and the impedance angle test. The article referred to is Robertson, J. D., and Wilson, A. T.: A Combined Study of the Basal Metabolism and Impedance Angle in Thyrotoxicosis and Myxedema, *Lancet* **2**:1158 (Nov. 24) 1934. Our observations anticipated those of the American workers by some six months.

J. DOUGLAS ROBERTSON, M.B.,
Middlesex Hospital Medical School, London.

LYMPHOCYTIC MENINGITIS

To the Editor:—Considerable interest has been shown by medical writers in the syndrome variously called aseptic, idiopathic, epidemic and acute lymphocytic meningitis. It was first clearly described by Wallgren (*Acta. pædiat.* **4**:158, 1925) and subsequently it formed the subject of a comprehensive article in the American literature by Viets and Watts (THE JOURNAL, Nov. 16, 1929, p. 1553).

At about this time I encountered a case with many similar characteristics at the Boston Psychopathic Hospital. This patient showing cerebral symptoms of an organic nature was found to have the typical signs and blood picture of infectious mononucleosis, commonly known as "glandular fever." Because of the uniqueness of the condition, the case was reported in detail under the title "Involvement of the Central Nervous System in a Case of Glandular Fever" (*New England J. Med.* **205**:1238 [Dec. 24] 1931). Simultaneously there appeared a similar report in the Scandinavian literature by A. H. Johansen (*Acta med. Scandinav.* **76**:269, 1931). In both of these articles the relationship between lymphocytic meningitis and infectious mononucleosis was emphasized. My attention was recently called by Dr. Edwin M. Cole (personal communication) to another case of this sort, showing the typical picture of infectious mononucleosis and the syndrome of mild meningitis.

During the last few years many authors, notably S. A. K. Wilson (*J. Neurol. & Psychopath.* **10**:36 [July] 1929) and Reiche (*Ztschr. f. klin. Med.* **110**:506, 1929) have stressed the association of central nervous system involvement with various generalized infections, such as postvaccinal encephalitis and the acute exanthems. These clinical observations have been subjected to experimental investigations of possible etiologic factors. From the latter standpoint attention has been repeatedly focused on the filtrable viruses.

Recently interest in lymphocytic meningitis was stimulated by some experimental investigations of a filtrable virus isolated from patients with this disease. The work of Armstrong (*Pub. Health Rep.* **49**:1019 [Aug. 31] 1934) and of Rivers and Scott (*Science* **81**:439 [May 3] 1935) indicates that a filtrable virus is the causative agent of acute lymphocytic meningitis and tends to prove that the disease is a clinical entity.

There are many discrepancies in the clinical and serologic observations in these cases, and the constancy of the signs and symptoms of this disease is questionable. It appears that there are many conditions, sometimes called encephalitis, in which this benign meningitic syndrome occurs. There are also known systemic diseases accompanied by changes in the central nervous system and these are not classed as clinical entities. Furthermore, some of the blood diseases of obscure etiology sometimes show central nervous system involvement. The best illustration of this phenomenon is furnished by the three case reports mentioned of infectious mononucleosis with involvement of the central nervous system. In the first two cases the spinal fluid cellular reaction parallels the cell counts of the peripheral blood, which indicates a close relationship between the two systems and between the diseases infectious mononucleosis and lymphocytic meningitis.

It seems to me that the crux of the whole problem lies in the larger concept of various systemic diseases of known and unknown etiology, giving rise to changes in the central nervous system. I am inclined to believe that such diseases as infectious mononucleosis may produce cerebral changes, and conversely that so-called lymphocytic meningitis, like certain of the encephalitides, is merely symptomatic of some as yet unknown systemic disease.

SAMUEL H. EPSTEIN, M.D., Boston.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

OXYGEN INHALATION IN PNEUMONIA

To the Editor:—More than a year ago in answer to an inquiry you published an article on the use of oxygen in pneumonia and described the technic of administration. In this article you described two types of nasal inhalers, one of them by Bullowa, and a device by which the rate of flow might be gaged by the diameter of its orifices. Surgical supply houses here seem unable to obtain these articles. I wish to make the following inquiries: 1. Are the nasal inhalers better tolerated by patients, especially children, than nasal catheters? 2. Is the administration of oxygen more effective when they are used? 3. Where may they be purchased? Please omit name.

M.D., Oklahoma.

ANSWER.—The advice in Queries and Minor Notes in THE JOURNAL, Jan. 27, 1934, page 311, was intended to instruct physicians to use industrial oxygen and, in an emergency, how to utilize an industrial oxygen regulator by interposing a slug perforated with a drill hole of suitable size in the rubber tubing leading from it.

If one purchases a regulator, the best type is a two-stage regulator with a variable orifice or float gage, because it indicates the amount of oxygen actually flowing. Once calibrated, it does not become inaccurate by use or overstrain. Dial gages are made with Bourdon tubes, which are subject to overstrain. They may indicate a high flow rate though there is no escape of oxygen from the catheter or inhaler. This is readily demonstrable to any one who pinches the tubing and observes the float and the dial.

1. Nasal inhalers with the oxygen discharged just within the nares are frequently better tolerated, especially by children, than soft nasal catheters inserted to the pharynx.

2. The inhaler or metal catheter with rubber tips inserted one-fourth inch into the nostrils is frequently more effective than a soft catheter, because oxygen is admitted to the two nostrils at the same time, and more oxygen can escape through a well made cannula than through even two catheters of size 10 French. Under 3 inches of water pressure no more than 1.5 liters per minute will escape from a single No. 10 French catheter of wide bore. The openings in small catheters frequently become obstructed by mucus, which is sometimes due to irritation of the catheter. When oxygen escapes at the same rate from a large and from a small opening, the pressure against the mucous membranes is less when the opening is large, and the mucous membranes are irritated less. When measured by the concentration of oxygen in the alveolar air, the administration of oxygen by the pharyngeal catheter had only slight or no advantage over the administration by a nasal inhaler.

3. Several varieties of inhalers or metal nasal catheters should be available to fit various physiognomies. The Bullowa inhalers, adult size, can be purchased from the F. A. Noble Company, Inc., 2136 Seventh Avenue, New York; the children's size from the Foregger Company, 55 West Forty-Second Street, New York. The Connel, Sanborn and Gwathmey inhalers may be purchased from the Foregger Company and many other surgical supply houses. Inhalers should be made of malleable brass without constriction at the fork. The cross bar for attachment to the forehead should be adjustable on the stem and held in place with an adequate spring. Children size inhalers should permit the free discharge of 6 liters of oxygen per minute measured with a variable orifice or float gage, and the adult size should permit the discharge of 15 liters per minute. Oxygen regulators approved by the Council on Physical Therapy may be purchased from dealers in oxygen and from many surgical supply houses. The Council has approved a float type regulator made by the Air Reduction Company and a dial type regulator made by the Linde Air Products Company.

HYPERTENSIVE DISEASE

To the Editor:—Last October I discovered that I had a blood pressure of 180 systolic, 100 diastolic. I am 54 years of age. Since last October the blood pressure has been averaging 180/100, but a few days ago it went to 200/120. I have had two electrocardiograms made, which were pronounced normal. The urine is reported as being normal. On roentgen examination my teeth appear to be sound. The chest and heart have been roentgenographed and no abnormality found. The tonsils were removed in 1919, but I was off work for a year at that time with a systemic infection but have been physically fit since then until last October. I sleep well and have a good appetite. There is a constant dull pain in both temples. There is a sense of fulness in the ears at times. I have no pep. I tire easily. I am forgetful. There is some shortness of breath at times. I am of a nervous temperament. The bowels are regular. I have gotten up once or twice at night to urinate for several years. The Wassermann reaction is normal. I have not been working hard for the last two years, but until that time I was putting in long, hard hours. My mother died at 75 with a "stroke"; my father died at 67 with what was supposed to be angina. I have taken sodium nitrite, bismuth subnitrate, bromides, phenobarbital and potassium thiocyanate without results. If you can give any advice from this meager history, it will be greatly appreciated. Please omit name.

M.D., Indiana.

ANSWER.—It would be of considerable interest and value to know what the arterial tension was a year ago and also a year before that. Knowledge of the rate of progression of hypertensive disease is valuable from both the prognostic and the therapeutic point of view. It is quite possible that the "systemic infection" in 1919, which required a year for recuperation, may have initiated the present disturbance.

Failure to obtain benefit from the forms of management already tried may be due to one or more of several factors. In the first place, the effects of medication with sedatives and/or the milder vasodilators may require several weeks before objective benefit is apparent; it is therefore possible that longer trial would be advantageous. The effectiveness of such management is largely nullified by intense apprehension. In the second place, arteriolosclerosis may have already occurred and no sedative or vasodilator medication will then be of value. This may be quickly determined by the amyl nitrite test (Stieglitz, E. J.: Arterial Hypertension, *Arch. Int. Med.* **46**:227 [Aug.] 1930; *Illinois M. J.* **62**:414 [Nov.] 1932). It is well known that hypertensive arterial disease initiated by influenza or similar systemic infection often progresses rapidly to extensive arteriolosclerosis, which is irrevocable and not amenable to therapeutic correction. The third explanation for the failure of medical management is that some active etiologic factor or factors yet remain undiscovered and therefore uncorrected. This is the most probable reason, at least from the data available, especially as the arterial tension appears to have increased still further recently. Thorough, painstaking search for etiologic factors is certainly indicated. Anemia (often not severe but still significant), thyroid dyscrasia, mild chronic plumbism (commonly overlooked), foci of infection other than the teeth, mild arsenic poisoning, and impairment of the renal function must all be carefully and fully ruled out. Many other factors of etiologic significance must also be considered should these prove "negative." The fact

that the "urine was reported normal" does not rule out renal functional impairment; this can be done only after functional evaluation by renal function tests. The more important of these include the concentration test (Fishberg), the diuresis-concentration test (Mosenthal), the urea clearance test and, perhaps, the sodium ferrocyanide excretion as a measure of glomerular efficiency (Stieglitz, E. J., and Knight, A. A.: Sodium Ferrocyanide as a Clinical Test of Glomerular Efficiency, THE JOURNAL, Dec. 8, 1934, p. 1760). The relative importance of constitutional or hereditary influences and added insults from various intoxications requires evaluation.

Advice then must be along these general lines: Further studies should attempt to determine and reveal unrecognized but active initiating etiologic factors and the correction of these whenever found feasible. Long continued sedation either through the nervous system (as with bromides) or more directly of the arterioles (as with bismuth subnitrate) is certainly indicated. Such management may require several weeks' continuance before benefit is apparent. Attention to diet, the correction of anemia and an adequate intake of fluid are essential. The newer surgical methods of attack, through dennervation of the adrenals, partial adrenalectomy and/or extensive sympathectomy, are still almost wholly experimental and thus far have failed to yield results at all commensurate with the risks involved.

"ADVANCES IN THERAPEUTIC TECHNIC"

To the Editor:—The paper by Dr. Bernard Fantus "Advances in Therapeutic Technic" (THE JOURNAL, Sept. 14, 1935, p. 877) is interesting, but I am not able to understand several points. Failure to have the National Formulary VI at hand makes the situation more difficult for me. 1. I understand that "iso-alcoholic elixir" is aromatic elixir with a changeable percentage of alcohol, whereas the official aromatic elixir has a stable content of about 23 per cent alcohol. Does iso-alcoholic elixir mean that the aromatic elixir should contain the same percentage as the alcoholic extract of the drug in question; e. g., should iso-alcoholic elixir in prescription 1 contain about 70 per cent alcohol, because tincture of digitalis contains about 70 per cent? 2. The statement is made before prescription 5: "For nonextractive substances the lowest alcoholic strength of iso-alcoholic elixir should be chosen. . . . As terpin hydrate requires strong alcohol for solution, the pharmacist will employ the high alcoholic elixir as the vehicle." I cannot understand this explanation. What does iso-alcoholic elixir mean in regard to nonextractive substances as given in prescription 5? What would be the difference between (*a*) terpin hydrate 5.0, iso-alcoholic elixir ad 60.0, and (*b*) terpin hydrate 5.0, aromatic elixir U. S. P. ad 60.0? I understand that elixir terpin hydrate N. F. contains 0.08 to one teaspoonful, whereas *a* and *b* would contain about 0.4 (one teaspoonful, 5 cc., as it really is). 3. I was unable to find "calbroben" in the Epitome, fourth edition, though calioben is mentioned; the description of the latter, however, does not indicate that calioben is composed in candy form. How should the candy form be prescribed? 4. May I ask you another question not directly pertaining to Dr. Fantus's paper? What form of prescription would you advise as an iron tonic for children in liquid and which one in candy form, but not a ready commercial preparation, and how to avoid the high content of alcohol, if prescribed as an elixir? Can aromatic elixir with 23 per cent be considered nonirritating if prescribed for children, and how about prescribing it for a patient suffering from chronic gastritis, a condition in which alcohol should be avoided in any form whatever? As most of the tonics or hematinics contain a high percentage of alcohol, if tonics are to be given is there any way out of that quandary by means of iso-alcoholic elixir? Going through all the prescriptions I noticed that there must be a mistake in prescription 4, cannabis (fluidextract) being given as 15.0! Thus prescription 4 would contain 1 cc. per teaspoonful, the dosage, however, being 0.1 cc.! What about prescription 12? There the dosage would be 1.25 per tablespoonful. Has that dosage been wanted by the author?

H. MARKT, M.D., Astoria, L. I., N. Y.

To the Editor:—I have been asked by my doctor to stock several items which I have been unable to locate from local jobbers. The items referred to are listed on pages 879 and 880 of THE JOURNAL, Sept. 14, 1935. The items in question are iso-alcoholic elixir and alkaline elixir eriodictyon. You say in the same paragraph that the formula can be found in Recipe Book II. Will you please advise me as to where I can purchase these items or where I can find the formula for making them?

CHARLES HORNE, Druggist, Greenville, S. C.

ANSWER.—For the production of iso-alcoholic elixir the pharmacist is given, in N. F. VI, a formula for a low alcoholic elixir and a high alcoholic elixir, which are to be mixed in the proportion required to produce a perfect solution with the medicament, whenever the physician prescribes iso-alcoholic elixir. The formulas for these two elixirs are as follows:

Low-Alcoholic Elixir

Compound spirit of orange	10 cc.
Alcohol	100 cc.
Glycerin	200 cc.
Sucrose	320 Gm.
Distilled water.....a sufficient quantity to make	1,000 cc.

Mix the alcohol, glycerin and 500 cc. of distilled water, add the compound spirit of orange, agitate thoroughly from time to time, and let stand for twenty-four hours. Filter through a hard paper filter, returning, if necessary, the first portions of the filtrate until it passes through clear. Dissolve the sucrose in the filtrate by agitation or percolation, and add enough of the solvent mixture to make the product measure 1,000 cc.

Alcoholic content: From 8 to 10 per cent, by volume, of ethyl alcohol.

High-Alcoholic Elixir

Compound spirit of orange	4 cc.
Saccharin	3 Gm.
Glycerin	200 cc.
Alcohol.....a sufficient quantity to make	1,000 cc.

Dissolve the compound spirit of orange and the saccharin in 700 cc. of alcohol, add the glycerin and sufficient alcohol to make the product measure 1,000 cc., mix well and filter.

Alcoholic content: From 73 to 78 per cent, by volume, of ethyl alcohol.

Table for Adjustment of Iso-Alcoholic Elixir

Low-Alcoholic Elixir	High-Alcoholic Elixir	Suitable as Vehicle for Preparations of the Following Alcoholic Strengths
1 volume	None	0-10 per cent
4 volumes	1 volume	10-20 per cent
3 volumes	1 volume	20-30 per cent
2 volumes	1 volume	30-40 per cent
1 volume	1 volume	40-50 per cent
1 volume	2 volumes	50-60 per cent
1 volume	3 volumes	60-70 per cent
1 volume	4 volumes	70-80 per cent
None	1 volume	80-95 per cent

For liquid galenicals, the strength of iso-alcoholic elixir to be used is the same as that of the menstruum or solvent employed in the preparation of the galenical.

When galenicals of different alcoholic strengths are used in the same prescription, the iso-alcoholic elixir to be used is to be of such strength as to secure the best solution possible under the circumstances. This will generally be found to be the average of the alcoholic strengths of the several ingredients.

For nonextractive substances, the lowest alcoholic strength of iso-alcoholic elixir that will yield a perfect solution should be chosen.

In prescription 1, the proportion of 1 volume of low-alcoholic elixir and 3 volumes of high-alcoholic elixir will give a liquid of about 70 per cent of alcohol, which will make a clear solution with tincture of digitalis.

2. For the terpin hydrate prescription the high-alcohol elixir is to be used as a solvent, as this quantity of terpin hydrate would not dissolve in alcohol of any lower strength. The elixir terpin hydrate N. F. VI is made to carry 0.07 Gm. of terpin hydrate by means of 40 per cent of alcohol. It is impossible to dissolve the required quantity of terpin hydrate in aromatic elixir.

3. Calbroben is also known as sabromin. It is calcium dibrombehenate and is recognized in N. N. R. Both it and calcium iodobehenate U. S. P. can be put up in candy form by mixing them with sugar containing 10 per cent of cocoa, with tincture of vanilla for flavoring and by compressing them in a tablet machine. Formulas for such sweet tablets are found in the Recipe Book published by the American Pharmaceutical Association.

4. There is also in the Recipe Book a prescription for sweet tablets of iron. Such tablets are available on the market. It is easy to prescribe an iron tonic for children in liquid form without the use of an elixir. Such a solution is suggested in the article under discussion as prescription 12, with considerable reduction in dosage, of course. The syrup of cinnamon is made by saturating cinnamon water with sugar, which will be the formula for Syrup of Cinnamon N. F. VI.

The low-alcoholic elixir as well as the various other elixirs of the N. F. contain so low a percentage of alcohol that they may be considered unobjectionable when prescribed for children or patients with chronic gastritis. The aromatic elixir U. S. P. might, on the other hand, be sufficiently irritating to be objectionable in chronic gastritis and possibly be slightly intoxicating to a small child.

5. The prescription for fluidextract of cannabis is intentionally made to contain a large dose of the active ingredient, as a smaller dose is not likely to produce any effect and the dose given is not dangerous, although it may put the patient into a dreamy state.

In prescription 12 the dose is intended to be 1.25 Gm. per tablespoonful, as the modern tendency is in the direction of large and liberal doses.

The formula for "alkaline elixir of eriodictyon" is as follows:

Oil of bitter almond	0.5 cc.
Vanillin	1.0 Gm.
Saccharin	1.5 Gm.
Fluidextract of eriodictyon	30.0 cc.
Solution of potassium hydroxide	27.5 cc.
Alcohol	500.0 cc.
Syrup	350.0 cc.
Orange flower water, sufficient quantity to make	1,000.0 cc.

Dissolve the oil of bitter almond, the vanillin and the saccharin in the alcohol, then add the syrup. Mix.

Mix the fluidextract of eriodictyon and the potassium hydroxide solution and add to the solution. Finally, add enough orange flower water to make 1,000 cc.

LEUKOPENIA WITH GRANULOCYTOPENIA

To the Editor:—A woman, aged 30, has a white count ranging between 2,500 and 3,000 cells, with a polymorphonuclear leukocyte percentage ranging between 30 and 50. This condition was detected one year ago. All possibility of foci of infection has been ruled out and she has not taken any drugs. The only symptom that she has is extreme fatigue and a general lassitude. I have given her pentnucleotide, which has caused the white count to increase temporarily; but the reaction is so great that I have not felt like giving it over a prolonged period of time. Recently I have been giving her a sterile milk antigen for nonspecific protein therapy; it causes very little systemic reaction and produces practically the same white blood count as when pentnucleotide is used. The patient is at rest most of the time. She has no household duties to perform and spends a portion of her time at complete rest in bed. Any suggestions that you might make in this case will be greatly appreciated.

M.D., Georgia.

ANSWER.—This case corresponds to the chronic leukopenias with granulocytopenia of unknown origin. This is a poorly understood group of cases. Roberts and Kracke have reported on this subject (*Ann. Int. Med.* **5**:40 [July] 1931). In an effort to determine whether any relationship existed between the symptoms of fatigue and exhaustion to the degree of granulocytopenia these authors made a statistical study of 8,000 records of patients seen in private practice who were ambulatory and had no acute illness. They found that one of every four patients may be expected to have a mild granulocytopenia and that it was particularly common in female patients between the ages of 40 and 60. The complaints of weakness, exhaustion or fatigue were twice as frequent in the patients with granulocytopenia as in those with normal white cell counts. Further, there was very little difference in the leukocyte count over a period of ten years. It was the opinion of these authors that there is a definite clinical syndrome consisting mainly of weakness, easy exhaustion, tendency to fatigue, loss of strength and inertia associated with leukopenia and granulocytopenia and that the severity of symptoms is largely dependent on the degree of granulocytopenia. The condition of agranulocytosis merely represented the most severe type. Treatment was not discussed in their paper. However, it is obvious that until more is known concerning the etiology of this group of cases the treatment can only be palliative. The use of repeated small transfusions of about 250 cc. of blood is safe and based on scientific fact and clinical experience. If patients who have recovered from this disorder are available, Fisher and Chrisman and Hinton report success with such blood when ordinary blood was without result. Any agent that is capable of stimulating the bone marrow to the production of granular cells is worthy of trial but must be used with caution. Among such agents Kracke lists various nonspecific protein substances, vaccines, serums, adenine sulphate, nucleinic acid, colloidal sulphur and the production of sterile abscesses. The use of small stimulating doses of x-rays to the long bones has its exponents but this treatment is potentially dangerous unless the blood is carefully checked and the treatment given by an experienced worker. Massive doses of liver extract by mouth have also been used with success in some cases. Each case should be carefully studied from all possible angles, including endocrine function, and the treatment individualized. For purposes of prognosis, bone marrow studies would be of value. If hypoplasia of myelocytic tissue is present the prognosis is invariably poor.

KAHN AND WASSERMANN TESTS

To the Editor:—A woman, aged 28, single, was sent to a sanatorium for tuberculosis. She had been classified as a minimal case; although her lesions were slight, her sputum was positive for the tubercle bacillus before admission. At the sanatorium routine Wassermann and Kahn examinations are made, and the patient, in the absence of a positive history, has shown consistently a 4 plus Kahn and a negative Wassermann reaction both in the sanatorium laboratory and in two other laboratories. After standing several days at room temperature, the serum shows a negative Kahn reaction. Can you explain such a reaction for me, or tell me an authority or source of information on this subject? The patient has a Vincent's infection of the gums, the only other positive finding in her physical examination. Kindly omit name.

M.D., Virginia.

ANSWER.—It is not unusual to find positive Kahn and negative Wassermann reactions in routine examinations, in view of the fact that the Kahn test is more sensitive in detecting syphilis than most Wassermann methods. The Kahn test is not known to give false positive reactions in tuberculosis. In one advanced case of Vincent's angina the Kahn reaction was positive during the height of the infection and was negative after the infection had subsided. This patient was believed to be free from syphilis. The observation that a serum will give a positive Kahn reaction and, after the serum has stood for several days at room temperature, a negative reaction is unusual. It is possible that after the serum had stood for several days at room temperature it may have undergone bacterial contamination, which would, of course, affect the results of all tests for syphilis. It may be also that after the serum had stood for several days at room temperature it was not reheated before the Kahn test was performed. Serums that have stood for twenty-four hours, after having been heated for thirty minutes at 56 C., must be reheated for at least ten minutes at this temperature before this test is performed. If the heated serum has stood for several days, it should be reheated for about twenty minutes. Regarding this phase of the inquiry, it might be well to communicate with the author of the Kahn test (Dr. R. L. Kahn, University of Michigan Hospital, Ann Arbor). Practically all complement fixation and precipitation methods will give an occasional false reaction in tuberculosis. This fact must be kept in mind when interpreting positive reactions in this infection. Yet thorough and extensive search for the possibility of syphilis must be instituted before considering a patient giving a positive reaction as nonsyphilitic.

POSSIBLE SCURVY

To the Editor:—Recently I saw an infant, aged 5 months, for the first time. The mother received antisyphilitic treatment during pregnancy, and the infant had received a total of six treatments, agent unknown. He had received no orange juice or cod liver oil and was on an evaporated milk dilution, with Karo. He was fairly well nourished, with only slight evidence of rickets. The temperature was 103 F. He had been crying all day when moved, especially when the back or shoulders were touched or pressed on. There was no vomiting or diarrhea. Examination gave no evidence of parenteral infection. There were no clinical signs of scurvy, tetany or syphilitic periostitis. The fontanel was flat; the reflexes were slightly increased, not suggesting either meningitis or poliomyelitis. The formula was diluted, an enema was ordered, and 2 ounces (60 cc.) of orange juice daily was commenced, together with antirachitic measures. One-fourth gain (0.016 Gm.) of phenobarbital was administered. On the following day the infant appeared perfectly well and now, three days later, continues to be. There is not the slightest tenderness. From this outline, what would you consider to be the most likely diagnosis? Please omit name, if published.

M.D., Georgia.

ANSWER.—This 5 months old infant with a fever of 103, who showed extreme tenderness when moved or touched, had received no orange juice and was on an evaporated milk formula, might well have been suffering with scurvy. The rapidity with which the condition cleared following the administration of orange juice strongly substantiates this diagnosis. Fever is often a symptom of scurvy. There is no evidence to show that the condition was of a syphilitic nature, and a syphilitic periostitis would not be so quickly relieved.

In a young infant extreme tenderness and fever may be the only symptoms of scurvy. When no teeth are present, the hemorrhagic changes in the gums are absent. Swelling of the extremities may also be absent. An early sign of scurvy, which is often overlooked, is hematuria. Roentgen examination may be negative; in fact, the changes in the roentgenogram may not be positive until a month or more following the time at which treatment was initiated.

It has recently been found that the cevitamic (ascorbic) acid content of the blood serum and urine are quite low in scurvy. Such a test might aid in the diagnosis of a case similar to that here under consideration. The rapidity with which the tenderness and fever of an active scurvy disappear following the administration of vitamin C is well known and could well fit in with the case in question.

VAN SLYKE TEST

To the Editor:—What is the significance of the Van Sylke test? How is the test made? Can a blood specimen be sent to the laboratory for the test, or is it necessary that the patient present himself to the technician? Please omit name.

M.D., Florida.

ANSWER.—The Van Slyke test is a method employed for the determination of the alkali reserve of the blood plasma, often called the carbon dioxide combining power of the blood plasma. This is the most important test for the detection of acidosis or alkalosis. It should be done in every case of suspected acidosis, including severe diabetes, nephritis and ketosis.

The principle of the test is the determination of the carbon dioxide content of blood plasma. The blood plasma is shaken in a separatory funnel filled with an air mixture the carbon dioxide tension of which approximates that of normal arterial blood. Thus the plasma combines with as much carbon dioxide as it is able to hold under normal tension. A known volume of the saturated plasma is then run into a special apparatus,

acid is added, and carbon dioxide is liberated by the production of a partial vacuum. The carbon dioxide is measured at atmospheric pressure and the volume corresponding to 100 cc. of plasma is calculated. A special expensive Van Slyke manometric apparatus is required for this test.

Another method consists of titrating the bicarbonate content of the plasma. It is given in Osgood and Haskins, Laboratory Diagnosis, 1931, on pages 296 to 298. It is too long and complicated to give in detail here. The titration method of Van Slyke as modified by Haskins and Osgood agrees closely with the figure obtained by the gasometric method.

The patient must present himself to the technician at the laboratory. Special precautions are necessary in drawing the blood. The patient should rest for one hour. One drop of potassium oxalate, saturated solution, is placed in a small test tube, 5 cc. of venous blood is obtained and the tube is inverted to mix with the oxalate. The blood must be kept in a cool place and the test done within two or three hours.

ANAL NEUROSIS

To the Editor:—What is the pathologic condition underlying anal neurosis? I can detect no anal, rectal or adjacent organic disease. The patient does not have hemorrhoids, fissure, fistula, crytitis, papillitis or pectinitis, but he continuously complains of a burning, scalding pain from the sphincter outward on the right side of the anus. He has been treated for years by rectal quacks and regular doctors. The regular doctors have done no more good than the quacks. Will cutting the presacral nerve relieve the anal discomfort? He had a thorough alcohol injection six months ago.

M.D., Oklahoma.

ANSWER.—It is usually unwise to speculate as to the cause or nature of an anorectal disorder on the basis of its description alone. However, if the patient developed his troublesome symptom following the onset of the treatment mentioned it is probable that the difficulty may be traced to that. Probably it will not help to cut the presacral nerve, which has its origin in the sympathetic nervous system. The nerves supplying the margins of the anus originate in the sacral roots. It would be unwise to cut these nerves, because the sensory and motor fibers are intimately connected. So-called anal neurosis is usually seen in just such cases as the one described. The difficulty usually originates as one of the prevalent "rectal" complaints, and "anal neurosis" develops after prolonged treatment and many operations.

EFFECTS OF MORPHINE

To the Editor:—What would be the effect of one-eighth grain (0.008 Gm.) of morphine sulphate given by mouth to a woman 72 years old, sick in bed with chronic myocarditis, having at the time a rapid heart of regular rate, with an occasional extrasystole, complaining of a "weak spell" and precordial distress, and being at the time under considerable nervous apprehension, and never having had morphine before by mouth or any other way? How soon after administration by mouth would the effect occur? How would the effect, if any, show itself to an objective examination?

M.D., Rhode Island.

ANSWER.—The first effect most likely would be a relief from the distress, a diminution of the ability to fix attention, and the induction of a dreamy state, succeeded by drowsiness, apathy and sleep. Very rarely excitation, extreme restlessness and even delirium occur instead of the phenomena of sedation. Such effects may occur from fifteen to thirty minutes after a dose taken by mouth, although they may not appear for hours if conditions for absorption from the alimentary tract are unfavorable. Objective examination, when the effects are at their height, would show small pupils, a diminution of the pulse and of the respiration rate. Constipation is usual; nausea and even vomiting are not uncommon after-effects.

RADIATION AND WATER METABOLISM IN EPILEPSY

To the Editor:—Is there any information available as to the effects of roentgen irradiation of the pituitary on the water metabolism, especially in epilepsy?

HUGH MACDONALD, M.D., Evanston, Ill.

ANSWER.—In the literature there is no evidence available as to the effects of roentgen irradiation of the pituitary on water metabolism, especially in epilepsy. However, an authority on epilepsy reports that he has tried this in a few cases without being able to convince himself that radiation under such circumstances has any definite effect on water metabolism. This authority feels that radiation gives collective results on the pituitary hormones without a specific effect on the particular hormone concerned. In a broad way his conclusion is that no beneficial effect can be demonstrated by high voltage roentgen therapy applied to the pituitary in cases of epilepsy. A second authority said that he had made special efforts to get information on this subject but without success. In general, at present, the tendency to irradiate the pituitary in a great variety of disturbances, glandular and otherwise, should be deprecated. Not only does roentgen radiation produce an indeterminable change in the pituitary itself, which may have far reaching consequences, but parts of the central nervous system are exposed to the rays at the same time.

INTRANASAL IMMUNIZATION OF SCARLET FEVER

To the Editor:—Will you please send me the technic of intranasal immunization of scarlet fever?

W. K. BULLOCK, M.D., Vernal, Utah.

ANSWER.—Various methods have been employed in attempts at intranasal immunization against scarlet fever. The toxin may be sprayed or instilled into the nose. The amounts of toxin employed for a single treatment have ranged from 2 or 3 to 10 cc. The treatments have been given at intervals of twenty-four hours to one week by different workers. Most of the toxin introduced into the nose is eventually swallowed. It has been shown that partial or complete immunity results from administration of toxin by mouth. Neither method is as effective as hypodermic injection.

"THE POLARITY OF CHEST LEADS"

To the Editor:—Will you accord me the privilege of commenting on your answer to my letter of August 25 (Queries and Minor Notes, THE JOURNAL, November 16, p. 1627) in regard to the polarity of chest leads? Also, I should like to add another argument for my view as to the preferable polarity.

I will not debate the first paragraph of your answer but will merely remark that the incongruity of the inverted record offends my taste; but chacun à son goût.

The second paragraph of your answer is, I think, a quite inadequate solution of the difficulty discussed. There is a definite need for a general designation for each component of the group of initial ventricular deflections, in chest leads as in limb leads. For instance, I am at present writing a paper on a matter relating to precordial leads and I wish to refer to the frequent absence of the large initial ventricular deflection in cases of anterior infarction. I should like to write "R is frequently absent," but this term is not applicable to inverted records, while to call the deflection a Q wave is highly objectionable. What term can be used for the missing deflection? McGinn and White's idea is excellent for describing the initial deflections of a particular record but obviously it furnishes no basis for terms of general applicability.

There is however another, more fundamental, argument. I omitted it from my former communication for the sake of brevity, but I will state it here as compactly as possible.

If the derivation is made from one point on the precordium and another point on a limb, the electrocardiogram is essentially a record of the rather large changes in potential at the precordial electrode, for the potentials at the distant electrode are relatively small. We are dealing, in fact, with a semidirect lead from the surface of the heart and the potentials recorded are largely determined by the potentials in that part of the heart immediately underlying the precordial electrode. The average electric vector of the whole heart has little influence in this case.

The possibility of thus recording local electrical phenomena in the heart has stimulated interest in the exploration of the whole precordial surface and observations are being extended even to the posterior surface of the heart through the esophagus. The pattern of the deflections obtained from these different points varies widely, those from the esophagus being more or less the inverse of those from the anterior surface. In view of the variety of patterns recorded it is certain that much confusion will result unless a sound principle guides the choice of polarity.

There is no doubt about what this principle should be. The requirement is that the records should show unequivocally the sign of the potential developed in the part of the heart under examination, and we must agree whether positive potentials are to be represented by upward or by downward deflections. Now, the normal initial ventricular deflection is caused by a positive potential at the precordial electrode, since the underlying myocardium is invaded from within outward; but if the inverse polarity is used, the deflection is made downward. It seems to me confusing and unwise to choose a downward deflection to indicate a positive potential. To do so violates a long established convention by which positive quantities are always represented by ordinates above the horizontal axis.

The normal polarity, moreover, gives records that are consistent with the records made by limb leads, in particular by lead 2. The erect R of lead 2 means that the left leg electrode is positive during the early phase of the spread of ventricular excitation. Now the left leg potential is influenced chiefly by the state of the surface of the apical half of the heart and an electrode on the precordium over the apex is affected in the same sense. It is therefore consistent that the deflection representing the initial potential on the precordium should be in the same direction as the deflection representing the initial left leg potential; that is, that it should be upward.

FREDERICK H. HOWARD, M.D., New York.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: *Written examination for Group B applicants* will be held in various cities throughout the country, March 14. *Oral examination for Group A and B applicants* will be held in Kansas City, Mo., May 11-12. *Applications for written examination should be filed with the secretary before Jan. 15.* Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada, Dec. 7. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Kansas City, Mo., May 11. Asst. Sec., Dr. Thomas D. Allen, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: St. Louis, Jan. 11. Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Kansas City, Mo., May 9. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 30. Sec., Dr. Walter Freeman, 1726 Eye St., N. W., Washington, D. C.

ARIZONA: *Basic Science.* Tucson, Dec. 17. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

CALIFORNIA: *Reciprocity.* Los Angeles, Dec. 4. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Jan. 7. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

KANSAS: Topeka, Dec. 10-11. Sec., Board of Medical Registration and Examination, Dr. C. H. Ewing, 609 Broadway, Larned.

KENTUCKY: Louisville, Dec. 3. Sec., Department of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

MARYLAND: *Medical (Regular).* Baltimore, Dec. 10-13. Sec., Dr. John T. O'Mara, 1211 Cathedral St., Baltimore. *Medical (Homeopathic).* Baltimore, Dec. 10-11. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MINNESOTA: *Basic Science.* Minneapolis, Jan. 7-8. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: *Basic Science.* Omaha, Jan. 7-8. Dir., Bureau of Examining Boards. Mrs. Clark Perkins, State House, Lincoln.

NORTH CAROLINA: *Endorsement.* Raleigh, Dec. 9. Sec., Dr. Ben J. Lawrence, 503 Professional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, Jan. 7-10. Sec., Dr. G. M. Williamson, 4½ S. 3d St., Grand Forks.

OHIO: Columbus, Dec. 3-5. Sec., State Medical Board, Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: Oklahoma City, Dec. 11. Sec., Dr. James D. Osborn Jr., Frederick.

RHODE ISLAND: Providence, Jan. 2-3. Dir., Department of Public Health, Dr. Edward A. McLaughlin, 319 State Office Bldg., Providence.

TENNESSEE: Memphis, Dec. 18-19. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

UTAH: Salt Lake City, Dec. 10-12. Dir., Department of Registration, Mr. S. W. Golding, 326 State Capitol Bldg., Salt Lake City.

VIRGINIA: Richmond, Dec. 11-13. Sec., Dr. J. W. Preston, 28½ Franklin Rd., Roanoke.

WASHINGTON: *Basic Science.* Seattle, Jan. 9-10. *Medical.* Seattle, Jan. 13-15. Dir., Department of Licenses, Mr. Harry C. Huse, Olympia.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 21. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Madison, Jan. 7-10. Sec., Dr. Robert E. Flynn, 410 Main St., LaCrosse.

Illinois June Examination

Mr. Homer J. Byrd, superintendent of registration, Illinois Department of Registration and Education, reports the written and practical examination held at Chicago, June 25-29, 1935. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Two hundred and sixty-one candidates were examined, 259 of whom passed and 2 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine		(1934)	88
Chicago Medical School		(1932) (1934) 80, (1935) 77, 77, 78, 79, 79, 79, 79, 80, 80, 80, 80, 81, 81, 81, 81, 81, 81, 82, 83, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 84, 84, 85, 85, 86, 87	84,
Loyola University School of Medicine		(1934) 86, (1935) 77, 79, 79, 79, 80, 80, 80, 80, 81, 81, 81, 81, 82, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 85, 85, 85, 85, 86, 86, 86, 87,* 87	84,
Northwestern University Medical School		(1933) 89, (1934) 85, 86,* 88, (1935) 76, 80, 81, 81, 82,* 82, 82, 82, 82, 84, 84, 85,* 85, 85, 86, 86, 86, 86, 86, 87, 87, 87, 87, 87, 88,* 88, 88, 88, 88, 88, 88, 88, 88, 89,* 89, 90, 90	87,*
Rush Medical College		(1934) 88, 90, (1935) 80, 80, 83, 83, 84, 84, 84, 85, 85, 85, 85, 85, 86, 86, 86, 86, 86, 87, 87, 87, 87, 88, 88, 88, 89, 90,* 91	87,
School of Medicine of the Division of the Biological Sciences (1935) 83, 84, 87, 88			
University of Illinois College of Medicine		(1934) 86, (1935) 75, 78, 79, 79, 80, 80, 81,* 81, 81, 81, 81, 81, 82, 82, 82, 82, 83, 83, 83, 83, 83, 83, 83, 84,* 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 85,* 85, 85, 85, 85, 85, 85, 85, 85, 85, 86,* 86, 86, 86, 86, 86, 86, 86, 86, 86, 87,* 87, 87, 87, 87, 87, 87, 87, 87, 87, 88, 88, 88, 88, 88, 89, 89, 89, 89, 90, 90, 90, 92	85,
University of Maryland School of Medicine and College of Physicians and Surgeons		(1934)	87
University of Minnesota Medical School		(1935)	86
St. Louis University School of Medicine		(1934)	83
Washington University School of Medicine		(1934)	83
Creighton University School of Medicine		(1934)	84
University of Nebraska College of Medicine		(1934)	83
Medical College of the State of South Carolina		(1932)	88
Marquette University School of Medicine		(1935) 84, 84, 86,	86
University of Wisconsin Medical School		(1930)	86
University of Toronto Faculty of Medicine		(1931)	86*
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1912) 84,† (1923) 81,† (1926) 88,† (1928)	82†
Hamburgische Universität Medizinische Fakultät, Hamburg		(1922) 83, (1933)	85†
Universität Heidelberg Medizinische Fakultät		(1925)	83†

School	FAILED	Year Grad.
Chicago Medical School		(1935, 2)

Thirty-five physicians were successful in the practical examination for reciprocity and endorsement applicants. The following schools were represented:

School	PASSED	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1934)	Arkansas
University of Colorado School of Medicine		(1930)	Colorado
Northwestern University Medical School		(1930)	Minnesota
University of Illinois College of Medicine		(1932)	Georgia
Indiana Medical College		(1905)	Indiana
Indiana University School of Medicine		(1926), (1931)	Indiana
State University of Iowa College of Medicine		(1929)	Iowa
University of Louisville School of Medicine		(1934, 2)	Kentucky
Harvard University Medical School		(1932)	Missouri
University of Michigan Medical School		(1931), (1933)*	Michigan
St. Louis University School of Medicine		(1933)* (1931),* (1932), (1933),* (1934, 2)	Penna., Missouri
Washington University School of Medicine		(1932), (1934, 2)	Missouri
Creighton University School of Medicine		(1934)*	Nebraska
University of Nebraska College of Medicine		(1927)	Nebraska
Eclectic Medical College, Cincinnati		(1929)	Ohio
University of Cincinnati College of Medicine		(1931) (1934)	Minnesota, Ohio
University of Tennessee College of Medicine		(1934)	Tennessee
Vanderbilt University School of Medicine		(1932)	Tennessee
Baylor University College of Medicine		(1934)	Texas
Milwaukee Medical College		(1908)	Wisconsin

School	PASSED	Year Grad.	Endorsement of
Loyola University School of Medicine		(1935),* (1935, 2)	N. B. M. Ex.
Northwestern University Medical School		(1934)	N. B. M. Ex.

* License held for fee.
† Verification of graduation in process.

Oklahoma June Examination

Dr. James D. Osborn Jr., secretary, Oklahoma State Board of Medical Examiners, reports the written examination held in Oklahoma City, June 5-6, 1935. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Fifty-two candidates were examined, all of whom passed. Four physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Tulane University of Louisiana School of Medicine		(1935)	89*
University of Oklahoma School of Medicine		(1935) 84,* 84,* 84,* 84,* 85,* 85,* 85,* 85,* 85,* 85,* 86,* 86,* 86,* 86,* 86,* 87,* 87,* 87,* 87,* 87,* 87,* 87,* 87,* 87,* 87,* 88,* 88,* 88,* 88,* 89,* 89,* 89,* 89,* 89,* 89,* 90,* 90,* 90,* 90,* 91,* 92,* 92,* 92,* 94,* 95,* 95,* 98*	82,*

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1932), (1934)	Arkansas
Washington University School of Medicine		(1929)	Missouri
University of Pittsburgh School of Medicine		(1910)	Penna.

* License withheld pending completion of internship.

Montana October Examination

Dr. S. A. Cooney, secretary, Montana State Board of Medical Examiners, reports the written examination held in Helena, Oct. 1-2, 1935. The examination covered 10 subjects and included 50 questions. An average of 75 per cent was required to pass. Four candidates were examined, all of whom passed. Seven physicians were licensed by reciprocity and two physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine		(1932)	87.1
Northwestern University Medical School		(1935)	83.7
Tulane University of Louisiana School of Medicine		(1935)	85.1
Washington University School of Medicine		(1934)	82.6

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College		(1932)	California
Kansas Medical College		(1904)	Kansas

University of Michigan Medical School	(1931)	Michigan
University of Minnesota Medical School	(1930), (1935)	Minnesota
St. Louis University School of Medicine	(1933)	Missouri
Creighton University School of Medicine	(1934)	Nebraska

LICENSED BY ENDORSEMENT

School	Year Grad.	Endorsement of
Northwestern University Medical School	(1933)	N. B. M. Ex.
University of Oregon Medical School	(1934)	N. B. M. Ex.

Book Notices

The Pneumonokonioses (Silicosis), Literature and Laws of 1934: International Abstracts, Extracts and Reviews of the Pneumonokonioses and Their Associated Diseases and Subjects. By George G. Davis, M.D., Associate Clinical Professor of Surgery, Rush Medical College, University of Chicago, Ella M. Salmonsen, Medical Reference Librarian, the John Crerar Library, Chicago, and Joseph L. Earlywine, Attorney at Law, Chicago. Cloth. Price, $10. Pp. 490. Chicago: Chicago Medical Press, 1935.

In 1934 the authors, using a similar title, presented through citations essentially all the bibliography of dusty lung diseases, beginning with 1556 and ending with 1933. That volume included the laws of the various states with reference to dusty disorders of the lung. In it the forecast was made that it constituted the first volume of a series. The present publication is the second volume of this series. Its chief contents are limited to publications on dusty lung diseases and closely related subjects solely for the year 1934. The principal difference in the two volumes resides in the fact that in the present publication abstracts, extracts or reviews are furnished—at times in great length—so that from this one publication it is possible to grasp the trend of thought of workers throughout the world with respect to the many onerous problems associated with dusty lung diseases—their causes, diagnosis, prognosis, significance and compensation. All the references in this volume have been translated into English. On first examination of this book it appears from alphabetical arrangements that the material is poorly organized. However, through the use of secondary indexes it readily becomes possible to bring together quickly all the scattered publications, such as those on "asbestos," "dust counts" or "fibrosis." Part II of the present volume, entitled "Laws—States and Cases," constitutes a supplement to the original publication, and without association with the original publication is by no means complete. This portion of this book is limited to sixteen pages and embraces only a small amount of legal material specifically associated with dusty lung diseases. As to this dearth of material no complaint can be made against the authors, and obviously it is the result of limited legislative action in this domain and of few basic decisions of the supreme courts of the several states. This book is by no means to be regarded as a textbook of dusty lung diseases. It is, as its title implies, a compilation of the extensive literature (396 items) published in the year 1934. For industrial hygienists, industrial physicians, and attorneys engaged in medicolegal practice, it will prove to be of much practical worth. Its greatest worth will fall to those users who have available the preceding volume containing the fundamental publications on this topic and the details of such laws as have a bearing on this type of occupational disease.

Radiological Atlas of Chronic Rheumatic Arthritis (The Hand). By S. Gilbert Scott, M.R.C.S., L.R.C.P., D.M.R. and E., Honorary Radiologist to the British Red Cross Clinic for Rheumatic Diseases, Regents Park. Cloth. Price, $8.75. Pp. 76, with 42 illustrations. New York & London: Oxford University Press, 1935.

This atlas describes in detail the characteristic changes encountered in the hand in each of the four groups of rheumatoid, hypertrophic, chronic infective and gouty arthritis. The author chose the hand because he agrees with Schober, who said "the hand is the visiting card of the rheumatic patient." The radiologic examination should play an important part in the diagnosis and classification of arthritis. In a certain number of cases it is possible to form a fairly accurate idea as to the prognosis. The examination of a large number of standardized roentgenograms of the hand at all ages leads one to conclude that "a man is as old as his bones" rather than "as old as his arteries."

Roentgenology portrays pathologic changes on the films in terms of shadows, and it is on the correct interpretation of these shadows that the ultimate value of the examination depends, while the experience gained by investigating a large amount of roentgenologic material is essential for attaining the maximum degree of diagnostic skill. The most frequent mistake is to diagnose symptoms that are being caused by malignant disease (usually secondary carcinoma of the vertebrae or bones of the pelvis) as lumbago or sciatica. The next mistake in order of frequency is the diagnosis of Paget's disease or osteitis deformans. If the possibility of error in diagnosis is to be reduced to the minimum, every patient complaining of persistent rheumatic pains should be subjected to a careful roentgen examination.

Decalcification of the skeleton is peculiar to rheumatoid arthritis. Loss of cartilage with the formation of osteophytes is associated with the osteo-arthritic group. Loss of cartilage with early sclerosis of those bones entering into the formation of the joint, usually of a single finger, denotes a chronic infective arthritis, while the "punched out" areas seen on the edge of the articular surfaces indicates the presence of deposits, which are characteristic of gouty arthritis. It is possible to have a mixed arthritis present in the same patient. In fact, the three types of arthritis might be represented in a single roentgenogram of one hand.

The degree of activity of the arthritis can be estimated in several of the groups from the roentgen examination. For example, the more transparent the bones in rheumatoid arthritis, the more active is the disease. Loss of cartilage in a single finger joint without sclerosis of the bone around denotes an active infective arthritis, and this evidence of activity or quiescence of the condition can be used to estimate the effect of any particular method of treatment. The general decalcification associated with rheumatoid arthritis takes place without any alteration in bone structure and suggests the possibility of a metabolic origin of rheumatoid arthritis.

The author discusses the term "bone density balance." A definite study of the more intimate structure, for instance, of the third metacarpal bone, will demonstrate the presence of three grades of density. The density of bone and any deviation from the normal cannot be accurately assessed unless certain technical details are observed having for their object the production of roentgenograms identical in quality. A roentgenogram of the bone is essential for the study of chronic rheumatic arthritis, not only for comparative purposes but as being the only reliable means of detecting the early decalcification of bone associated with rheumatoid arthritis.

In rheumatoid arthritis the principal clinical feature, atrophy of the soft tissues, is registered roentgenographically in the bones not as a true atrophy but as a general decalcification. Decalcification of bone may occur a considerable time before the onset of joint symptoms, and arthritic changes show themselves only when the cartilage has become involved in the general atrophy of tissue. The author believes that no case should be diagnosed or classified as rheumatoid arthritis unless a generalized decalcification of bone is present.

In rheumatoid arthritis the stages as indicated roentgenographically are: First stage, decalcification of bone. Second stage, loss of cartilage in several of the minor joints; increase of decalcification. Third stage, erosion of articular surfaces; subluxation; increase in decalcification. The disease may become quiescent at any time. This will be denoted by a return of bone calcium and an increase in bone density.

In hypertrophic arthritis the stages as indicated roentgenographically are: First stage, loss of cartilage, usually to one side of the terminal joint of a finger; slight lateral displacement. Second stage, complete loss of cartilage with the formation of osteophytes, Heberden's nodes, or the deposit of periarticular ossicles in close proximity of a joint. Third stage, irregularity of the joint surfaces; excessive osteophytic formation.

In chronic infective arthritis the stages as indicated roentgenographically are: First stage, loss of cartilage in a single joint; wrist or midphalangeal joints of ring or middle finger usually involved. Second stage, sclerosis of bone in the immediate neighborhood. Third stage, bony ankylosis; subluxation.

In gouty arthritis the characteristic roentgenographic feature is the presence of deposits, which are recorded on the film as small "punched out" areas on the surface of the articular bone, immediately under the cartilage, or show as definite holes in the articular end of the bone. Critical examination of a roentgenogram of gouty arthritis may show even an earlier stage, indeed the first, which is often overlooked. This consists of a small local destruction or a "wiping out" of bone trabeculae in the immediate neighborhood of a joint and precedes the actual formation of the deposit. The changes may require the use of a lens for their detection.

In gouty arthritis the stages as indicated roentgenographically are: First stage, minute localized destruction or disappearance of bone trabeculae in the immediate neighborhood of a joint. Second stage, small "punched out" areas on the surface of the articular bone, or holes in the articular end of the bone; loss of cartilage may be present. Third stage, loss of cartilage in those joints in which deposits are demonstrated. Fourth stage, destruction of the articular ends of bones from excessive gouty deposits. In gouty arthritis there is no alteration in bone density, however advanced the disease may be.

This is an interesting and instructive contribution. The author has commendably crystallized much material. A word of praise is also due the publishers. It is to be regretted that so fine a book should have the limited sale imposed on it by the price.

Baptism of the Infant and the Fetus: An Outline for the Use of Doctors and Nurses. By the Reverend J. R. Bowen, Chaplain, St. Joseph Mercy Hospital, Dubuque, Iowa. Paper. Price, 25 cents. Pp. 11. Dubuque: M. J. Knippel Company, 1935.

This brief outline prescribes methods of baptizing Catholic babies. It is directed to Catholic and non-Catholic physicians and nurses officiating at deliveries with the view of bringing "the privileges of Baptism to the little ones, and affording inestimable consolation to the parents," particularly when viability of the new born is in question. This urgency is discussed under such special headings as conditional baptism, the premature fetus, difficult delivery, baptism in the uterus, when a pregnant mother is dying, when a mother dies in pregnancy, the baptism of monsters, and disposal of the dead fetus. Due respect is paid to medical and moral considerations illustrated in the conditions for performing a cesarean section after the death of the pregnant mother. It is made perfectly plain that "a dying mother is in no condition to ponder such an obligation" as permitting a section. Furthermore, section is not permitted when it "does not offer a chance of saving the mother's life but, on the contrary, will directly contribute to her death." The material is clear and brief, and the suggestions should prove no burden to conscientious physicians and nurses of any creed. The pamphlet lends itself to ready reference and should be available in all maternity departments. It is published under official Catholic auspices.

Nouveau traité de médecine. Publié sous la direction de G. H. Roger, Fernand Widal et P. J. Teissier. Fascicule XX: Pathologie du système nerveux (bulbe, nerfs craniens, méninges, moelle). Half-cloth. Price, 130 francs. Pp. 984, with 193 illustrations. Paris: Masson & Cie, 1935.

For years those who have the other volumes of this series dealing with the nervous system have been awaiting the publication of the present one. It is five years since the last of the other volumes dealing with the nervous system in this series was published and ten since the first. The subjects already covered are the cerebrum and cerebellum, the sympathetic nervous system and the neuroses, and there is a volume on the general symptomatology of the nervous system. The present volume treats of the pathology of the brain stem, the cord, the cranial nerves and the meninges. The treatment is orderly and follows a conventional pattern, each brain stem subdivision being taken up by a different author; Lari and Thiers contribute most of the articles dealing with the pathology of the spinal cord. The authors of all the sections are well recognized in their respective fields in French neurology. When one goes over each of the topics, it is amazing to note the thoroughness with which the subject is discussed, being detailed without waste of words. For the most part the anatomy and physiology are given in sufficient detail to permit understanding of the pathology; and in a number of places there is even a historical discussion of the development of knowledge concerning the type of disorder studied. The book is fairly well illustrated with pictures of patients, reproductions of x-ray plates, and microscopic sections. It should serve as a good reference book for persons deeply interested in neurology who do not have the courage or the knowledge of German to consult Lewandowsky, and it must not be forgotten that the present French reference book is more nearly down to date than that famous one in German. Since the various parts are discussed by different authors the style varies, but on the whole it is fairly easy French reading.

Kleine Chirurgie. Von Professor Dr. Hans Kurtzahn. Third edition. Paper. Price, 12 marks. Pp. 456, with 170 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1935.

This manual of minor surgery is intended primarily for the use of medical students, for which purpose it is admirably adapted. It reflects the manner in which the author has anticipated the need of students: well established and easily performed procedures are given preference to those still in the experimental stage. The organization of the material resembles that of most textbooks of similar character. The book is extensively illustrated and has an adequate index. The tannic acid treatment of burns is not mentioned. Ethyl chloride, not popular in this country for general anesthesia, is recommended for this purpose. An alcoholic solution of tannic acid for preparation of the operative field does not have many sponsors here. Such remarks are not intended to diminish the merits of the book; they only illustrate the confusion created in the mind of an inexperienced American student who finds in foreign books statements not conforming with instructions received in our schools. While the manual summarizes in a practical manner the principles of minor surgery for a medical student, it is too concise, primitive and superficial to be of great service to a general practitioner.

1000 Questions and Answers on T. B. Edited by Fred H. Heise, M.D., Medical Director, Trudeau Sanatorium. Cloth. Pp. 232. New York: National Tuberculosis Association, 1935.

Undertaking to answer a thousand questions about tuberculosis is a momentous task. It would scarcely be expected that such a book of questions and answers would meet with universal approval among physicians dealing extensively with tuberculosis. Difficulties inherent in the question and answer technic are in many instances almost insurmountable. The questions have been assembled from a question and answer department of the *Journal of the Outdoor Life* and here published. Even physicians who do not wholly agree with all the answers will nevertheless find that the book should be helpful and encouraging to the tuberculous patient who has practically never been able to ask his doctor all the questions he would like to. The questions are grouped under sixteen different headings and a satisfactory index affords a quick reference to the particular phase of tuberculosis discussed.

Leistung und Grenzen des Röntgenverfahrens bei der Erkennung tuberkulöser Lungenveränderungen. Von. Priv.-Doz. Dr. Walter Schmidt, Direktor u. leit. Arzt des Tuberkulosekrankenhauses Heidelberg-Rohrbach. Eine vergleichende röntgenologisch-klinische und anatomische Betrachtung unter Mitwirkung von Priv.-Doz. Dr. H. Wurm, Prosektor am pathol. Inst. Heidelberg. Nr. 57, Tuberkulose-Bibliothek, Beihefte zur Zeitschrift für Tuberkulose. Herausgegeben von Dr. Franz Redeker, Oberregierungs- und Medizinalrat, Berlin, und Dr. Karl Diehl, dirigierender Arzt, Sommerfeld. Boards. Price, 10 marks. Pp. 80, with 104 illustrations. Leipzig: Johann Ambrosius Barth, 1935.

This treatise is the fifty-seventh of a series of monographs issued as supplements to the *Zeitschrift für Tuberkulose* and is devoted to a consideration of the value and limitations of roentgenology in the diagnosis of pulmonary tuberculosis as revealed not only by serial x-ray studies but also by correlating the shadows noted on chest films with the pathologic changes disclosed by frontal sections of the lungs. The twenty-six pages of text included in the monograph present excellent discussions dealing with the roentgenologic identification of calcified and noncalcified old (primary?) foci of disease, the early nodule and the early infiltration of pulmonary tuberculosis of the adult type, the possibility of roentgenographically identi-

fying the pathologic condition present, the prognosis, extent and course of the disease, the technic of roentgen examinations and other pertinent topics of importance. The illustrations have been selected with great care and show all desired details distinctly. This splendid, concise and scholarly treatise reflects comprehensive scientific knowledge and extensive clinical experience on the part of the authors and merits the attention of roentgenologists, physicians, investigators and others interested in tuberculosis.

The Anatomy of the Nervous System from the Standpoint of Development and Function. By Stephen Walter Ranson, M.D., Ph.D., Professor of Neurology and Director of the Neurological Institute, Northwestern University Medical School, Chicago. Fifth edition. Cloth. Price, $6.50. Pp. 501, with 381 illustrations. Philadelphia & London: W. B. Saunders Company, 1935.

The fifth edition of this standard textbook differs from the fourth notably by the addition of forty illustrations of brain sections, chiefly from Jacobsohn and Jelgersma, so that the atlas at the end of the text now comprises Weigert sections of twenty transverse levels of the brain stem, five oblique sections through the region of transition between the midbrain and the thalamus, three horizontal sections of the internal capsule, and twelve frontal sections of the cerebral hemisphere. These, with accompanying descriptions, give the elementary student the necessary landmarks for orientation in the study of his laboratory material. The text has been revised without enlargement, with a judicious selection of references to recent research. Limitations of space are doubtless responsible for the omission of much new detail, especially in the cerebral hemispheres, to which one would expect reference. It is unfortunate that in this revision figure 7 (the Kollmann 2.4 mm. human embryo, figure 13 of the fourth edition) is not replaced by a more accurate picture free from the artefacts of that specimen. On the whole the treatment is well balanced, and this work maintains its place as the most generally useful textbook of neuro-anatomy in the English language for medical students.

Laboratory Manual of the Department of Bacteriology and Immunology, Peiping Union Medical College. Prepared under the direction of C. E. Lim, Head of Department. Second edition. Cloth. Price, $1.50. Pp. 190, with 2 illustrations. Peiping: The College, 1935.

This manual was designed for service as a practical guide to those diagnostic and analytic laboratory methods in clinical bacteriology and serology which the author has found to be best adapted to the teaching, research and clinical needs of his department. It is free from the objectionable restrictions and divisions that limit the utility, for advanced workers, of manuals written solely for student courses. The material covered is so treated that it is especially useful to those interested in clinical laboratory procedures. Although it lacks illustrations and is too brief for much research use above that for which it was intended, this manual contains useful information not usually found except in comprehensive volumes. The section on laboratory animals is well written and useful, since this subject is usually neglected elsewhere. A table of temperatures, pulse and respiration rates and Scarborough's hematologic chart for normal laboratory animals are included. Procedures are simplified, although frequently more highly modified than necessary for American use. The volume is well outlined and information is easily accessible. References are numerous; a section on classified references is included. A chapter is reserved for the examination of pathogenic fungi.

The Achievement of Happiness. By Boris Sokoloff, M.D., Sc.D. Cloth. Price, $2.25. Pp. 271. New York: Simon & Schuster, 1935.

The evaluation of this book is rather difficult because of its unusual nature. Intended as a book of inspiration, it tries to carry out its purpose by means of short lectures consisting of illustrative yarns from the author's experience and also some which he retells at second hand. How much inspiration a depressed psychotic or maladjusted individual can obtain from a literary source is questionable; but, placed in the hands of an occasional chronic complainer, the present work might serve some purpose. The medical information in it is scattered, from various sources, and scanty. The medical topics are chiefly endocrinology, fatigue and sexual adjustment. The author's primary interest, according to the publishers' note, is biochemistry. He does not mention enough of this in the book to indicate his soundness or unsoundness in this field—he is obviously no psychiatrist. The book need not be wholly condemned for, as a short unsystematized, well written autobiographical scrap-book, it makes interesting reading. The author has apparently had many unusual experiences.

Trattato di micopatologia umana. Diretto dal Prof. Gino Pollacci, direttore del r. Laboratorio crittogamico italiano, Pavia. Volume IV: Repertorio sistematico dei miceti dell'uomo e degli animali. Dal Prof. Arturo Nannizzi, libero docente di micologia nella r. Università di Siena. Paper. Price, 100 lire. Pp. 557, with 224 illustrations. Siena: S. A. Poligrafica Meini, 1934.

In this abundantly illustrated catalogue the diagnosis of each species is given in telegraphic style, making it unnecessary to wade through the Italian verbiage. In addition, a short paragraph indicates the habitat of the fungus and the type of disease produced. Considering the completeness of the catalogue, Nannizzi has done well to keep such an enormous mass of information within the scope of the 557 pages. The subject matter is down to date and in view of its completeness fills a long needed want for a place to go when examining the various fungous species once the mycologist has gotten as far as the generic diagnosis. For English speaking workers the fact that the text is in italian may be a disadvantage; however, the general sense of the message may be rather readily obtained by the mycologist by piecing together his knowledge of Latin with already established technical terms in mycology. The most serious criticism is the lack of references; but perhaps these indefatigable workers at Pavia and Siena have plans whereby this can be taken care of. This criticism, however, is insignificant in the face of the numerous other valuable features of the catalogue.

The Evaluation of Symptoms: Offered After Fifty Years in Medicine. By Oliver T. Osborne, M.A., M.D., F.A.C.P. Cloth. Price, $3.50. Pp. 163. New Haven, Connecticut: Yale University Press for the Author, 1935.

This is a small book but it contains a tremendous amount of information. No one but a man of great experience could have attempted to gather together symptoms in the manner in which Dr. Osborne has done. One might anticipate that such a condensed array might be uninteresting reading, but this is not the case. This book certainly presents to the practitioner the importance of the symptomatology of disease. "It is the treatment of symptoms that gives success to many physicians who do not even attempt to make a diagnosis." Dr. Osborne, of course, believes in making a diagnosis but wisely places an analysis of symptoms in the first order of importance. The book should be a valuable addition to the library of physicians as well as fourth year medical students.

Puerperal Gynecology. By J. L. Bubis, M.D., F.A.C.S., Consultant in Obstetrics, Gynecologist, Mt. Sinai Hospital, Cleveland, Ohio. Cloth. Price, $3.50. Pp. 199, with 81 illustrations. Baltimore: William Wood & Company, 1935.

This book provides one with a collection of material that has never before been available in a single volume. The author considers the subject from the onset of pregnancy to the end of the puerperal period, stressing in particular antepartum prophylaxis of the more common and sometimes serious results of negligence or careless handling of the patient during the antepartum and delivery periods. The chapter dealing with the pathology of the cervix is well done and should be of great value to the general practitioner doing obstetric work. Although one may not entirely agree with the author as to the feasibility of doing major plastic repair work on the female genital tract immediately following delivery, one can be safely guided by the criteria laid down in the text for the choice of case in which such treatment may be attempted. This book has a definite place in the obstetric field because of the lack of such material calling to the attention of the profession the need for proper surgical care during the early puerperal period.

The Sinister Shepherd: A Translation of Girolamo Fracastoro's Syphilidis sive de morbo gallico libri tres. By William Van Wyck. Cloth. Price, $4.50. Pp. 85, with illustrations. Los Angeles: Primavera Press, 1934.

Here is another translation of the famous discussion of syphilis by Fracastoro. It is handsomely printed and illustrated with reproductions from early editions of this notable work.

Medicolegal

Workmen's Compensation Acts: Pneumothorax Not Attributable to Strain.—The claimant, in the course of his work, was on his knees, in a "twisted" position, in a small space, trying to lift one end of a heavy desk. As he made the effort he felt a sharp pain in the left side of his chest, as if something "gave way." The incident was immediately reported to his superior and he was relieved of the task in which he was engaged. Apparently no further symptoms developed for about twenty-four hours and then, while stooping over and cleaning a wash basin, the claimant felt a very sharp pain, so acute that he could not straighten up. He continued to suffer and after about four days was sent to a hospital. After his discharge he instituted proceedings under the workmen's compensation act. The industrial accident commission denied his claim for compensation, and he petitioned the district court of appeal, second district, division 2, California, for a writ of review. That court was of opinion that the claimant was entitled to compensation and therefore annulled the order of the industrial accident commission and remanded the case to the commission for action in accordance with the court's opinion. *Quigley* v. *Industrial Accident Commission*, 35 P. (2d) 544. The commission again denied compensation, and the claimant appealed to the Supreme Court of California.

In the words of the Supreme Court, the claimant sustained "a spontaneous hemopneumothorax, that is, a complete collapse of the left lung." The only disputed question, said the court, is whether the collapse of the lung resulted from a preexisting pathologic condition not connected with the employment or from the strain of lifting the desk. Only under the latter condition would the injury be compensable.

The insurance carrier, in opposing the employee's claim for compensation, produced as a witness a specialist in lung diseases who had personally observed probably 225 cases of pneumothorax. In his opinion, he testified, there is always a pathologic condition preceding a spontaneous pneumothorax, whether that condition is demonstrable or not. He had never known spontaneous pneumothorax to develop in a patient whose lungs were normal and healthy. Statistics show that 90 per cent of such cases are due to tuberculosis. Practically all cases of spontaneous pneumothorax develop from a ruptured tubercle on the outer surface of the lung, the rupture of a single tubercle being able to produce the condition without much infection being present. The fact that the claimant spit up blood while he was in the hospital was suggestive of "some pathology." Most cases of pneumothorax, according to the witness, occur while the patient is asleep or at rest. No case of pneumothorax, according to the witness, ever occurred from strain. It was impossible to say whether the condition occurred when the claimant was endeavoring to lift the desk, but even if it did, witness believed that the strain of lifting did not cause it. Human lungs are constructed to withstand, without damage, far more pressure than it is possible for a person to build up by physical effort. A scientific conclusion could not be drawn that the effort that the claimant made to move the desk increased the air pressure to such an extent as to cause his pneumothorax. The witness testified that he made a physical examination of the claimant some months after the injury and had examined the roentgenograms taken when the claimant was first in the hospital and had examined also the reports of various physicians. He could not tell definitely, however, whether the claimant had had tuberculosis, although there were some indications that he did have it.

Other medical witnesses testified that they were unable to connect the claimant's pneumothorax with his muscular strain in undertaking to lift the desk, being inclined to connect it rather with an old or an active tuberculosis. One of them called attention to the twenty-four hour period elapsing after that effort and before the onset of disabling symptoms, for which intervening period he could find no adequate explanation if the pneumothorax came on at the time of the strain.

The evidence, said the Supreme Court, amply supports the action of the industrial accident commission in disallowing compensation. Physicians testifying for the employee gave a logical explanation of the cause of the delay in the appearance of symptoms and testified that the strain caused a tear in the lung tissue that led to the collapse of the lung and that they could find no evidence of tuberculosis. This evidence was directly contrary to the evidence introduced on behalf of the insurance carrier. It was beyond the province of the appellate court, however, to weigh the evidence.

The action of the commission in disallowing compensation was affirmed.—*Quigley v. Industrial Accident Commission (Calif.), 43 P. (2d) 289.*

Charitable Hospitals: Liability for Negligence of Student Nurse.—One of the plaintiffs was a patient in the defendant hospital. While there she was severely burned by a hot water bottle, negligently left in a bed that a student nurse prepared for her reception immediately after an operation. The injured patient and her husband sued the hospital, and from a judgment in their favor the hospital appealed to the Supreme Court of Washington.

Under the established rule in the state of Washington the hospital, a charitable institution, was not liable for the negligent act of an employee unless it failed to exercise ordinary care in selecting and retaining her. The trial court, however, instructed the jury that the negligence of the nurse in this case raised a presumption that the hospital had not exercised ordinary care in her selection and retention, thus applying to the situation the rule of res ipsa loquitur. In the opinion of the Supreme Court, this was error; the nurse's negligence did not necessarily raise any such presumption. It would not be reasonable or logical to attach to a single negligent act of an employee the presumption that her employer was negligent in her employment. To apply the rule of res ipsa loquitur in such cases would deprive charitable institutions of the benefit of the rule of exemption and in effect make them liable generally for the negligence of their employees. The Supreme Court reversed the judgment of the trial court and remanded the case for a new trial.—*Bise v. St. Luke's Hospital (Wash.), 43 P. (2d) 4.*

Diseases: Constitutionality of Illinois Occupational Disease Act.—Section 1 of the Illinois occupational disease act, enacted in 1911, provides:

> That every employer of labor in this State, engaged in carrying on any work or process which may produce any illness or disease peculiar to the work or process carried on, or which subjects the employees to the danger of illness or disease incident to such work or process, to which employees are not ordinarily exposed in other lines of employment, shall, for the protection of all employees engaged in such work or process, adopt and provide reasonable and approved devices, means or methods for the prevention of such industrial or occupational diseases as are incident to such work or process.

The constitutionality of this section was contested in two cases here abstracted. In each case the Supreme Court of Illinois held the section to be unconstitutional.

It is a well recognized requirement, said the Supreme Court, that the terms of a penal statute creating a new offense must be sufficiently explicit to inform those who are subject to it what conduct on their part will render them liable to its penalties. *Connally* v. *General Construction Co.*, 269 U. S. 385, 46 S. Ct. 126. The fact that the act has been construed and applied during a long period of time does not necessarily make it valid and render it immune from attack. Section 1 of the act under consideration imposes a duty on every employer to know not only whether he is engaged in the pursuit of any work or process which may produce a particular illness or disease but also whether such work or process may produce an illness or disease which is peculiar or special thereto. He must know whether the employment subjects his employees to the danger of illness or disease incident to such work or process to which employees are not ordinarily exposed in other lines of employment. He is required to possess accurate information not only as to the etiology of all occupational diseases to which his employees may be subject but also those to which the employees of other employers are subject. The mere statement of the proposition carries its own condemnation, said the court. The act furnishes no guide to an employer seeking to determine whether an illness or disease produced by his employment is one "to which employees are not ordinarily exposed

in other lines of employment." The meaning of the word "ordinarily" as used in this respect is especially ambiguous. It is obviously impossible for any person reading the language to discern with a reasonable degree of certainty to whom it applies or what illness or diseases fall within its general terms.

Furthermore, section 1 does not attempt to state what "devices" the legislative mind contemplated. To be valid the statute must prescribe a standard so definite, fixed and understandable as to permit a compliance therewith by one who desires to meet its requirements. The statute need not specify and particularize the exact norm, but it must lay down a guide that has a definite, fixed meaning. While the word "reasonable" has a fixed definite meaning at common law as applied to a standard of degree and diligence, the word as used in section 1 cannot be given that sense, as it is employed as a description of the "devices, means or methods" commanded to be furnished and adopted by the employer. "Approved," as used in section 1, is not more intelligible than the word "reasonable" as employed in that section. "Approved" has no definite, special, technical, trade or common law meaning or meaning by established precedents. By whom the approval mentioned is to be made is left open to conjecture. From a reading of section 1 the employer must decide whether his industry is included in the class thereby created and whether he must provide the "reasonable and approved devices, means or methods," and what they are, for the prevention of occupational diseases incident to the work of his undertaking. The employer must be able to forecast accurately the devices, means and methods required of him to avoid liability under the statute. It would be unjust to hold the employer liable in the exercise of his business knowledge for his failure to guess correctly as to his duty where the statute itself creates no criteria for his safe and sure guidance. A statute which requires the performance of an act in terms so indefinite, uncertain and puzzling that men of ordinary intelligence must necessarily guess at its meaning and differ as to its application transcends due process of law.—*Parks v. Libbey-Owens-Ford Glass Co. (Ill.), 195 N. E. 616; Boshuizen v. Thompson & Taylor Co. (Ill.), 195 N. E. 625.*

Workmen's Compensation Acts: Death from Thrombosis of Mesenteric Artery Following Infected Injury of Eye.—Barto, the deceased employee, received compensation for the loss of the use of an eye, resulting from an infection of a wound of the eye in the course of his employment. The wound was infected May 27, and the resulting ulcer on the eye was pronounced healed July 16. About seven months after the latter date Barto died, after an abdominal operation three days earlier; but whether there had or had not been any symptoms of illness during that period, the record does not show. The operation disclosed multiple thrombi in the small branches of the mesenteric artery, involving about three feet of the small intestine. No point of origin of this infection was found in the abdomen. Barto's widow, attributing her husband's death to the injury to his eye, sought compensation under the workmen's compensation act. The industrial commission disallowed compensation, the circuit court set aside the order of the commission, and the employer appealed to the Illinois Supreme Court.

The medical experts agreed that death resulted from thrombosis of the mesenteric artery. They agreed also that the thrombosis was caused by an infection exisiting in some part of the body. No source of infection was found in the abdomen. There was evidence that the deceased employee had pyorrhea at the time of the injury to his eye. There was evidence also that a year before his death he had what seemed to be an infected gallbladder, for which operation was advised but refused by him. There was lay evidence to show that pus was occasionally discharged from the infected eye up to the time of the employee's death, and medical evidence to show that although the ulcer had healed infection might exist and be discharged into the blood stream. No witness testified definitely that the thrombosis resulted from the eye infection; the most any of them would say was that it could have resulted from that source.

The record is clear, said the Supreme Court, that where, as in this case, there is more than one possible point of infection, medical experts cannot determine from which source infective thrombosis arises. Lacking more definite proof of a causal relation between the eye infection and the thrombosis, the circuit court was not warranted in setting aside the order of the industrial commission disallowing compensation. The judgment of the circuit court was therefore reversed and the award set aside.—*Barto v. Industrial Commission (Ill.), 195 N. E. 454.*

Malpractice: Liability for Death of Patient under Anesthetic.—The mere fact that a patient dies under the influence of an anesthetic, said the superior court of Delaware, imposes no liability on a dentist who administers nitrous oxide gas to the patient preparatory to the extraction of a tooth. The doctrine of res ipsa loquitur does not apply in such a case. The plaintiff must either allege and prove a lack of requisite knowledge or skill on the part of the defendant or a failure on his part to exercise the proper degree of care and diligence, or, some negligence of the defendant being alleged, there should appear some state of facts connected with the instrumentality in the control of the defendant or with the treatment accorded to the plaintiff which brings about a result so inconsonant with the normal and usual result that it must presuppose negligence in the application of the treatment.—*Mitchell v. Atkins (Del.), 178 A. 593.*

Indemnity Insurance: Malpractice by Unlicensed Assistant.—The Hartford Accident and Indemnity Company issued to Lee, a licensed osteopath, a malpractice indemnity policy which excluded from coverage injuries caused by Lee or his assistant while engaged in any unlawful act. A patient obtained a judgment against Lee and his assistant, Matson, in an action based on malpractice. Subsequently the patient instituted the present action against the insurance company to recover the amount of the judgment. The trial court held for the defendant, and the plaintiff appealed to the district court of appeal, second district, division 2, California.

Apparently, the unlicensed assistant, Matson, treated the plaintiff. Since the assistant, said the court, was without any license to heal the sick and afflicted in California, his act in the treatment of the plaintiff and the conduct of Lee in knowingly permitting such treatment made them both guilty of a violation of law and the performance of an unlawful act. The plaintiff's injuries were due to the lack of skill exercised by the assistant and were the result of the use by Lee of an unqualified and unlicensed assistant in violation of the provisions of the law. Such being the case, the loss was not covered by the insurance policy. The judgment of the trial court was therefore sustained. —*Glesby v. Hartford Accident & Indemnity Co. (Calif.) 41 P. (2d) 365.*

Society Proceedings

COMING MEETINGS

American Association for the Study of Neoplastic Diseases, Baltimore, Dec. 19-21. Dr. Eugene R. Whitmore, 2139 Wyoming Avenue N.W., Washington, D. C., Secretary.

American Student Health Association, New York, Dec. 27-28. Dr. Harold S. Diehl, University of Minnesota Medical School, Minneapolis, Secretary.

Eastern Section, American Laryngological, Rhinological and Otological Society, Newark, N. J., Jan. 3. Dr. Henry B. Orton, 24 Commerce St., Newark, N. J., Chairman.

Middle Section, American Laryngological, Rhinological and Otological Society, Milwaukee, Jan. 11. Dr. William E. Grove, 324 East Wisconsin Avenue, Milwaukee, Chairman.

Mid-Western Section, American Laryngological, Rhinological and Otological Society, St. Louis, Jan. 14. Dr. Harry W. Lyman, Carleton Building, St. Louis, Chairman.

National Society for the Prevention of Blindness, New York, Dec. 5-7. Mr. Lewis H. Carris, 50 West 50th Street, New York, Managing Director.

Puerto Rico, Medical Association of, Santurce, Dec. 13-15. Dr. Euripides Silva, Ave. Fernandez Juncos, Parada 19, Santurce, Secretary.

Radiological Society of North America, Detroit, Dec. 2-6. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.

Society of American Bacteriologists, New York, Dec. 26-28. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.

Society of Surgeons of New Jersey, Jersey City, Jan. 15. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

Southern Section, American Laryngological, Rhinological and Otological Society, Jackson, Miss., Jan. 18. Dr. Robin Harris, Lamar Building, Jackson, Miss., Chairman.

Southern Surgical Association, Hot Springs, Va., Dec. 10-12. Dr. E. W. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.

Western Surgical Association, Rochester, Minn., Dec. 6-8. Dr. Albert H. Montgomery, 122 South Michigan Boulevard, Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases and Nutrition, Chicago

2: 449-510 (Oct.) 1935

Acute Pancreatitis: Clinical and Pathologic Study, with Personal Observations. A. Le Sage and J. R. A. Le Sage, Montreal.—p. 449.

Bacteriologic Observations in Disease of Biliary Tract: Comparison of Operative Findings with Those of Nonsurgical Drainage of Biliary Tract in One Hundred and Four Cases. E. C. Hanssen and A. Yurevich, New York.—p. 460.

Calculating Diagnostic Value of Gastric Analysis: Study in Methodology of Diagnosis. Frances R. Vanzant and W. C. Alvarez, Rochester, Minn.—p. 466.

A Year's Exclusive Meat Diet and Seven Years Later. C. W. Lieb, New York.—p. 473.

*Gastro-Intestinal Manifestations Accompanying Diseases in Upper Urinary Tract. B. S. Abeshouse, Baltimore.—p. 477.

Gastro-Intestinal Symptoms in Diseases of Urinary Tract.—According to Abeshouse, an accurate diagnosis of a lesion in the upper urinary tract must be based on a detailed history, careful physical examination, complete laboratory studies of urine and blood, and a thorough urologic study. Every pathologic condition in the kidney and ureter should be studied from the standpoint of its effect not only on the urinary tract but also on the body as a whole. Pathologic conditions in the upper urinary tract usually are accompanied by well recognized symptom complexes but occasionally are unaccompanied by any urinary symptoms. In many instances they produce symptoms referable to other organs or systems of organs outside the urinary tract, particularly the gastro-intestinal tract. The gastro-intestinal manifestations of diseases in the upper urinary tract may be classified as toxic, mechanical or reflex. The renodigestive reflexes concerned in the retroperitoneal syndrome are classified according to their effects on the various portions of the gastro-intestinal tract: the principal types are the renogastric and reno-intestinal reflexes. These reflexes may be motor, secretory or vasomotor. They may be associated with one another or combined with cardiac, respiratory or vasomotor reflexes, or occur simultaneously with other visceromotor reflexes. The point of origin of the renodigestive reflexes varies in the different clinical cases. The response to these stimuli varies in the same or in different patients. Factors influencing the response to these renodigestive reflexes are summation of primary irritative stimuli, sensitization of nerve centers and individual predisposition. The gastro-intestinal manifestations of these renodigestive reflexes may be classified as gastroduodenal, biliary, appendical, colonic and peritoneal. Cases illustrating each type are presented by the author. A complete urologic examination is indicated in every obscure abdominal condition, especially in patients who have been subjected to an abdominal operation without relief. Every urologist should familiarize himself with the symptomatology of pathologic conditions in the gastro-intestinal tract. Every surgeon should recognize the fact that lesions of the upper urinary tract may produce symptoms of a pathologic condition in the gastro-intestinal tract, and vice versa. Pyelo-ureterography, retrograde or intravenous, is of immeasurable value in the differential diagnosis of lesions within the upper urinary tract and in their differentiation from other pathologic conditions in the gastro-intestinal tract and in other organs adjacent to the kidneys and ureters. A flat roentgenogram of the genito-urinary tract should be adopted as a routine diagnostic measure in every obscure abdominal condition, especially in cases of so-called chronic appendicitis. A negative roentgenogram of the genito-urinary tract does not exclude a disease of the kidney or ureter. Pyelo-ureterographic studies should include horizontal and upright positions in order to rule out a movable kidney. Stereoscopic pyelo-ureterograms are of great value in determining the exact location and size of any abdominal mass and its relation or effect on the upper urinary tract. The author urges the establishment of an adequate follow-up system to determine the incidence of cures and failures in the operative treatment of abdominal conditions in view of the high percentage of failures to obtain relief of abdominal pain as reported in statistical studies of large series of abdominal operations.

American Journal of Diseases of Children, Chicago

50: 827-1094 (Oct.) 1935

Effect of Ketogenic Diet on Blood Sugar and Respiratory Quotient of Children. F. B. Talbot and Velma Bates, Boston.—p. 827.

Rheumatic Cardiac Disease in Childhood: Statistical Study. L. M. Taran, Brooklyn.—p. 840.

Pathogenesis of Tuberculosis in Man: Certain Governing Principles and the Causal Relationship Existing Between Primary and Reinfection Types of Disease. C. A. Stewart, Minneapolis.—p. 853.

Ophthalmoscopic Appearance of Nerve Head in the New-Born and in the Young Infant. S. Karelitz and P. Vogel, New York.—p. 872.

*Use of Typhoid Vaccine in Treatment of Chorea: Its Possible Dangers. Rachel Ash and N. Einhorn, Philadelphia.—p. 879.

Psychologic Interpretation of Persistence of So-Called Moro Reflex. W. Dennis, Charlottesville, Va.—p. 888.

Respiratory Metabolism in Infancy and in Childhood: XVI. Effect of Intravenous Infusions of Fat on Energy Exchange of Infants. H. H. Gordon and S. Z. Levine, New York.—p. 894.

Treatment of Gonorrheal Vulvovaginitis in Childhood with Ovarian Follicular Hormone: Series of Cases in Which Treatment Was Unsuccessful. J. T. Witherspoon, New Orleans.—p. 913.

*Use of Convalescent Blood in Whooping Cough: Review of Literature. W. L. Bradford, Rochester, N. Y.—p. 918.

Measurements of Size of Heart in Normal Children: Statistical Study. Marion G. Josephi, New York.—p. 929.

*Congenital Lymphangiectasis (Lymphedema). P. B. Mason and E. V. Allen, Rochester, Minn.—p. 945.

Use of Typhoid Vaccine in Treatment of Chorea.—Ash and Einhorn suggest that shock from the use of typhoid vaccine in the treatment of chorea may do harm in the presence of rheumatic carditis. Injections repeated at short intervals may also do harm by causing a continued lowering of the number of circulating leukocytes. Of their seventeen patients having chorea treated with intravenous injections of typhoid vaccine, in four patients with uncomplicated chorea and in one with chorea and rheumatic carditis there occurred a secondary rise of temperature from one to two weeks after the last injection of vaccine. In three patients treated in the presence of active carditis there was evidence of increasing severity of the existent carditis. One of the children died six weeks after the last injection of vaccine. In the other two patients eventual improvement occurred. The carditis might have taken a similarly unfavorable course under conservative treatment. In a disease with such great variability as rheumatism, it is difficult to draw conclusions on the basis of a few cases. The authors cannot help feeling, however, that the use of intravenous injections of typhoid vaccine is not harmless in the presence of rheumatic infection. On the other hand, a large proportion of patients with chorea do not present carditis. It is in these children without carditis that the use of typhoid vaccine seems justifiable. Perhaps it may prove to be a valuable procedure even in certain nonchoreic forms of nervousness in children. The sedimentation test is the best single laboratory guide to the presence of rheumatic infection but it is not infallible. In the presence of an increased sedimentation rate, conservative measures in the treatment of chorea seem indicated. An early depression and subsequent rise of the number of granulocytes occur during the febrile reaction following intravenous vaccination. Persistent leukopenia in one of the authors' patients was considered an indication for cessation of the administration of vaccine. It may be advisable to control this method of therapy by frequent determinations of the white blood cell count. Otherwise, repeated daily use of an agent that depresses the formation of granulocytes may produce harm either through an increase in the rheumatic disease itself or through the development of agranulocytic angina.

Use of Convalescent Blood in Whooping Cough.—Bradford gave fifty-eight children, chiefly less than 3 years of age, injections either of 10 cc. of serum taken in the eighth week of convalescence or from 10 to 20 cc. of whole blood taken from an adult (parent) who had had the disease previously.

Forty-four of the children were obliged to remain in homes in which one or more cases existed. Twenty-seven of this group received the injections during the incubation period. The disease developed in fifteen but was mild in ten. There was one complication. Of twenty children used as controls, eight had a mild form of the disease; eight, average, and four, severe. Complications developed in four. In seventeen children exposed in the family who received the preventive vaccine after symptoms of coryza existed there was no indication that the course of the disease was modified. In a group of sixteen patients exposed outside the family, nine were given injections during the incubation period, and the number completely protected was so great as to suggest that the exposures may not have been genuine. From evidence obtained by observation of treated patients exposed in the home along with suitable controls and from the survey of the literature to date, it seems probable that immune blood is effective in the prevention and modification of whooping cough if given before the catarrhal symptoms appear. If given after the disease is established, favorable results are less apparent.

Congenital Lymphangiectasis.—Mason and Allen present five cases of congenital lymphedema that have been observed at the Mayo Clinic. The macroscopic and microscopic observations of tissues that were removed during the Kondoleon type of operation were characterized by the replacement of normal subcutaneous fat with fibrous tissue and with enlarged lymphatic vessels, chiefly in the region of the deep fascia. The authors feel that the microscopic appearance of the tissue is so characteristic that the term congenital lymphangiectasis should be used to replace the term congenital lymphedema, because congenital lymphangiectasis describes the condition better.

American Journal of Hygiene, Baltimore

22: 257-494 (Sept.) 1935

Invasion of Body Tissues by Orally Ingested Bacteria and Defensive Mechanism of Gastro-Intestinal Tract. L. F. Gulbrandsen, Chicago.—p. 257.
Plasmodium Hexamerium, N. Sp. from Blue Bird, Inoculable to Canaries. C. G. Huff, Chicago.—p. 274.
Making Permanent Preparations of Anopheline Mid-Guts: Note. H. E. Hingst, Columbia, S. C.—p. 278.
Infectivity of Treponema Pallidum in Excised Syphilitic Tissue. P. D. Rosahn, New York.—p. 283.
Increased Numbers of Carriers of Corynebacterium Diphtheriae Demonstrable by Extensions of Bacteriologic Procedures. M. Frobisher Jr. and Vivian A. Van Volkenburgh, Baltimore.—p. 292.
Efficiency of Pooling for Sterility Cultures. H. Muench, New York.—p. 302.
Susceptibility and Resistance of Rats to Infections with Trichomonad Flagellates from Rat and Man. R. Hegner and Lydia Eskridge, Baltimore.—p. 307.
Absence of Pathogenicity in Cats Infected with Trichomonas Felis from Cats and Trichomonas Hominis from Man. R. Hegner and Lydia Eskridge, Baltimore.—p. 322.
Carbarsone: Its Action on Trichomonas Hominis and on Rat Trichomonads in Vitro. A. Gabaldon, Baltimore.—p. 326.
Influence of Diphtheria Toxin on Infection with Trypanosoma Equiperdum in the Rat. S. Raffel, Baltimore.—p. 339.
Cultivation of Trichomonas Columbae Free from Bacteria. G. Cauthen and M. M. Harris, Baltimore.—p. 364.
Pathologic Changes Produced in Intestines of Kittens by Endamoeba Histolytica, With and Without Certain Added Bacteria. Bertha Kaplan Spector, Chicago.—p. 366.
Further Studies of Revival, After Drying, of Snail Hosts of Human Schistosomes of Egypt. C. H. Barlow, Cairo, Egypt.—p. 376.
Iso-Electric Zones of Eberthella Typhosa and Brucella Abortus Agglutinins. S. R. Damon and A. A. Hajna, Baltimore.—p. 392.
Diphtheria Toxoid-Antitoxin Floccules Prepared with Human Antitoxic Serum. J. Y. Sugg, New York.—p. 398.
*Observations on Ascaris Sensitivity in Man. T. L. Jones and A. A. Kingscote, Montreal.—p. 406.
Studies on Life History and Host-Parasite Relations of Hymenolepis Fraterna (H. Nana, Var. Fraterna, Stiles) in White Mice. A. V. Hunninen, Baltimore.—p. 414.
Comparative Study of Nippostrongylus Muris in Rats and Mice. D. A. Porter, Baltimore.—p. 444.
Studies on Effect of Milk Diet on Resistance of Rats to Nippostrongylus Muris. D. A. Porter, Baltimore.—p. 467.
Nutritional Requirements of Mosquito Larvae (Aedes Aegypti). W. Trager, Princeton, N. J.—p. 475.

Ascaris Sensitivity in Man.—Jones and Kingscote found that twenty-seven of 108 subjects, mostly veterinary undergraduates selected at random, gave positive reactions to a scratch test with 5 per cent saline extract of pig ascaris. A period of exposure seems to be a necessary precursor and continued reexposure may lead to at least partial desensitization. Various fractions of ascaris were similarly tested. In some subjects an eosinophilia followed the reaction. A positive reaction is no indication of previous infection, although previous exposure by contact may be necessary. However, continued exposure does not necessarily cause sensitization.

American Journal of Surgery, New York

30: 1-204 (Oct.) 1935

Spinal Tuberculosis: Climatic and Operative Treatment. F. H. Albee, New York.—p. 60.
Treatment of Fractured Skulls. C. O. Bates, Greenville, S. C.—p. 66.
*Fractures of the Pelvis: Clinical Study of Fifty-Six Cases. F. M. Conway, New York.—p. 69.
Avulsion of Distal Biceps Brachii Tendon. D. G. Leavitt and J. H. Clements, Seattle.—p. 83.
Aneurysm of Thoracic Aorta: Report of Case with Surgical Intervention. M. Behrend and R. S. Boles, Philadelphia.—p. 86.
Herniation of Lung Tissue into Bronchus. M. S. Lloyd, New York.—p. 90.
Surgical Care of Patients in Extremes of Life. J. J. Morton, Rochester, N. Y.—p. 92.
*Technic for Inversion of the Bowel. R. B. Bettman, Chicago.—p. 109.
Benign Fibrous Stenosis of the Common Duct. R. F. Carter, New York.—p. 110.
Resection of the Colonic Flexures. H. Koster, Brooklyn.—p. 115.
Appendicitis Mortality Rates: Regional Differences in the United States. C. C. Dauer and G. D. Lilly, New Orleans.—p. 119.
Lymphangioma and Hemangioma of the Mesentery. C. S. Herrman and L. A. Soloff, Philadelphia.—p. 125.
Neoplasms of Kidney and Ureter: Report of Forty Cases. G. G. Smith, Boston.—p. 130.
*Symptoms of Pelvic Endometriosis. R. D. Mussey and W. L. Butsch, Rochester, Minn.—p. 141.

Fractures of the Pelvis.—Conway states that in a review of fifty-six cases of pelvic fracture, admitted over a period of nineteen months, there were only four cases of accompanying genito-urinary injury. In twenty-four cases there were abdominal signs of pain, tenderness and increased muscle spasm due to retroperitoneal hemorrhage. Abdominal puncture as an adjuvant to the diagnosis of intra-abdominal injury has proved of inestimable value in positive cases. The mortality, thirteen deaths, was definitely influenced by the degree of severity of the accompanying injuries. Nine patients died within twenty-four hours following admission. Russell traction has a definite part in the reduction of sacro-iliac dislocations and distortions. In cases of suspected involvement of the bladder, direct instillation of a radiopaque substance by the urethral route with a subsequent roentgenogram is of more value than the attempt to siphon back a measured amount of instilled fluid. The mechanism of urethral injuries in children is believed to be due to a temporary diastasis of the urogenital diaphragm with concomitant tearing of the urethra; only rarely does a bony fragment lacerate the urethra. The relative infrequency of visceral complications was a principal feature of the present group of cases.

Technic for Inversion of the Intestine.—Bettman points out that in the inversion of the ends of the cut intestine during an intestinal resection with side-to-side anastomosis or the inversion of the duodenal stump during the operation of partial gastrectomy the first half of the closure of the open end of the cut intestine or duodenal stump is performed as usual and the suture is left long and untied. A second suture threaded on a small full curved needle is then placed in what will be the end of the suture line, including all layers, and is tied. The curved needle is then inserted through the intestine or stump of the duodenum, piercing the mucosa about half an inch below the cut edge and emerging through the serosa (that is, from within out). If this suture is now pulled taut, the part of the cut surface of the intestine that otherwise is difficult to invert will invert easily and, if it is held taut, the closure can be completed quickly. The inversion suture is cut off flush with the intestine and will retract inside.

Symptoms of Pelvic Endometriosis.—Mussey and Butsch studied the histories of fifty cases of endometriosis demonstrating that dysmenorrhea of the acquired type, which affects a woman more than 30 years of age, is suggestive of endometriosis. Pain that occurs in relation to previously normal menstrual periods, whether before, during or after the period, is significant of endometriosis, although in the presence of this condition pain may occur at other times. The pain may be intermittent

at first, but it tends to assume a more constant character and to become progressively worse with successive menstrual periods; it may be increased by physical activity. Pain on defecation or rectal straining, related to the menstrual period, and diarrhea or rectal bleeding that occurs only at the menstrual period, are of distinct significance. Attacks of nausea and vomiting related to the menstrual period and accompanied by localized pain may indicate the presence of endometriosis. The clinical diagnosis of pelvic endometriosis rests largely on the history and physical observations. The latter may be definitely diagnostic, as when the growth is found in the rectovaginal septum, but the diagnosis is often elusive and it is evident that a carefully developed clinical history is of distinct value in the recognition of this condition.

American Journal of Tropical Medicine, Baltimore

15: 495-604 (Sept.) 1935

Relapsing Fever in Texas: V. Survey of Epidemiology and Clinical Manifestations of Disease as It Occurs in Texas. H. A. Kemp, W. H. Moursund and H. E. Wright, Dallas, Texas.—p. 495.
Embryonic and Tumor Tissues as Culture Mediums for Micro-Organism of Rat Leprosy. E. L. Walker and Marion A. Sweeney, San Francisco.—p. 507.
*Intravenous Toxicity of Atabrine (Atebrin). W. T. Dawson, W. Gingrich and E. D. Hollar, Galveston, Texas.—p. 515.
Infection of Anopheles Bachmanni, Petrocchi, with Plasmodium Vivax, Grassi and Feletti and Observations on Bionomics of Mosquito. L. E. Rozeboom, Panama, Republic of Panama.—p. 521.
Intravenous Administration of Certain Drugs in Therapy of Avian Malaria. W. W. Swezey, Baltimore.—p. 529.
Treatment of Experimental Yellow Fever Encephalitis with Specific Immune Serum. M. Hoskins, Bahia, Brazil.—p. 545.
Rapid Technic for Iron-Hematoxylin Staining Requiring No Microscopic Control of Decolorization. C. M. Johnson, Panama, Republic of Panama.—p. 551.
History of Bubonic Plague in New Orleans. C. L. Williams, New Orleans.—p. 555.
*Sprue: Roentgenologic Changes in Small Intestine. T. T. Mackie, D. K. Miller and C. P. Rhoads, New York.—p. 571.
Dangers to Southerners in Northward Migration. C. A. Mills, Cincinnati.—p. 591.

Intravenous Toxicity of Atabrine.—Owing to the very slow excretion or destruction of atabrine in the body, Dawson and his associates state that it seems unnecessary to employ a dose larger than 0.1 Gm. for intravenous injection for an adult. The margin of safety is probably not great, and intravenous injection should be resorted to only in emergency. The injections should be made slowly and should be timed to take several minutes for completion. The total amount of the drug injected over a period of twenty-four hours should not exceed 0.3 Gm. Untoward effects of atabrine appear to include gasping or accelerated respiration, circulatory failure, collapse, vomiting, possibly rise of temperature, psychoses, loss of appetite and of weight, abdominal pain, headache, diarrhea, yellowed sclera and rather persistent yellowing of the skin. In view of the very slow excretion or destruction of the drug in the body, it is reasonable to consider that a course of treatment with it should not be repeated within a period of approximately eight weeks, and the drug should be taken only under supervision of a physician.

Sprue: Roentgenologic Changes in Small Intestine.—Mackie and his co-workers demonstrated characteristic changes roentgenographically in the small intestine in seventeen cases of sprue. There is a striking variation in the contour and in the size of the intestinal lumen. The motor activity is markedly abnormal and frequently produces a segmental distribution of the barium sulfate. These changes may be localized or may extend throughout the entire length of the small intestine. In the duodenum the mucosal folds appear thickened and the lumen is dilated irregularly. The valvulae conniventes of the jejunum are thickened, more widely separated than normal and irregular in size, producing a distorted mucosal pattern. Here again the lumen frequently appears dilated, a change that may be extensive or may be confined to isolated segments. The barium usually passes through the jejunum very slowly and moves irregularly. It is apt to collect in short segments of intestine that are dilated and abnormally smooth, while the regions immediately adjacent are empty. The filled areas show no evidence of peristalsis. Roentgenograms taken subsequently show a similar irregular arrangement of the barium-filled intestinal segments at a lower level. At times all the barium that has left the stomach is collected in a localized pocket, while the remainder of the jejunum and the duodenum are empty. The discharge from the stomach to the duodenum is spasmodic, corresponding apparently to the local delay in the forward progress of the opaque meal through the small intestine. The changes in the ileum are similar to those in the proximal parts of the intestine. Although the rate of passage of the barium through the small intestine is subject to wide variation, the forward progress of the opaque meal is not more rapid than normal. The specificity and response to therapy of the changes in outline of the small intestine in sprue may be significant in clarifying the mechanism of the disease. Similar changes have been observed in other conditions exhibiting clinical evidence of multiple deficiency states. The intensity and extent of the abnormalities in the small intestine vary directly with the severity of the clinical picture in sprue, and they regress under specific therapy. They may play a part in the defective absorption or utilization of essential food factors.

Annals of Internal Medicine, Lancaster, Pa.

9: 219-358 (Sept.) 1935

Pulmonary Fibrosis and Emphysema. J. A. Miller, New York.—p. 219.
Etiology of Pulmonary Fibroses and Medicolegal Aspects of Pneumoconiosis. W. S. McCann, Rochester, N. Y.—p. 234.
*Treatment of Chronic Rheumatoid Arthritis: Further Observations on Use of Streptococcic Vaccine. C. W. Wainwright, Baltimore.—p. 245.
Gastric Acidity in Chronic Arthritis. E. F. Hartung and O. Steinbrocker, New York.—p. 252.
Differential Diagnosis of Diseases of Liver. B. B. V. Lyon, Philadelphia.—p. 258.
Treatment of Peripheral Vascular Disease by Means of Suction and Pressure. E. M. Landis and L. H. Hitzrot, Philadelphia.—p. 264.
Von Gierke's Glycogen Disease. L. M. Lindsay, A. Ross and F. W. Wigglesworth, Montreal.—p. 274.
Diverticulosis of Large Intestine: Evaluation of Historical and Personal Observations. H. C. Ochsner, Waukegan, Ill., and J. A. Bargen, Rochester, Minn.—p. 282.
*Internal Myxedema: Report of Case Showing Ascites, Cardiac, Intestinal and Bladder Atony, Menorrhagia, Secondary Anemia and Associated Carotenemia. R. F. Escamilla, H. Lisser and H. C. Shepardson, San Francisco.—p. 297.
Recovery from Coronary Thrombosis: Report of Eight Cases, with Particular Reference to Recognition of Less Severe and Atypical Types. C. Smith and H. C. Sauls, Atlanta, Ga.—p. 317.

Treatment of Chronic Rheumatoid Arthritis.—Having demonstrated the strain of streptococcus among the many used to which a patient was most skin sensitive, Wainwright used this information as a guide to vaccine treatment. Twenty-eight patients with chronic rheumatoid arthritis received streptococcus vaccine intravenously at weekly intervals for periods varying from two months to more than one year, and since then seventeen additional patients have been treated. All foci of infection were removed. The vaccines used were prepared from hemolytic strains in all but two instances. The patients received weekly intravenous injections of vaccine prepared from the strain to which they had shown the maximal skin sensitivity. The initial dose was approximately 5 million organisms contained in 0.5 cc. of vaccine. The dose was increased by 0.5 cc., provided no constitutional reaction occurred. Febrile reactions were avoided by beginning with a small dose and increasing the dose sufficiently slowly. The increase in dosage was gaged by the patient's response and no set schedule of dosage was followed. Although no constitutional reactions occurred, as a rule the patients complained of focal reactions for about twenty-four hours after each injection. This reaction was manifested by increased pain in the involved joints, but after the reaction subsided the symptoms were usually improved. The improvement came about slowly, making its appearance in from four to six weeks after treatment was begun. Joints have flared up during treatment, but would often subside in a shorter time than was the patient's previous experience. In some cases definite improvement has been observed up to a point at which the arthritis seemed to become stationary, and beyond this point no further improvement was obtained. The benefit derived manifested itself by decreased pain, reduced swelling of the joints and of the surrounding soft tissues, and increased mobility of the joints. Streptococcus vaccine was given intravenously to two patients suffering from active pulmonary tuberculosis. The increase in dosage was made cautiously, and constitutional reactions were avoided. In both cases the arthritis has improved during treatment. Not only has the pulmonary tuberculosis not progressed but healing has gone on, and in one

case the pulmonary lesion is now considered inactive. During treatment the skin reaction to the strain used has regularly diminished in intensity and in most instances has entirely disappeared. Agglutinins have appeared in the patient's serums for the strain employed, when not already present, and when present, as was the case with the hemolytic strains, the titer has materially increased during treatment. In all cases treated the sedimentation rate has been elevated, in some much higher than in others. The highest rate at the beginning of treatment was 54 mm. in one hour and the lowest was 15 mm. Fifteen of the forty-five cases treated either have not improved or else the change that has come about has been so slight that improvement was questionable. In none of the cases has the arthritis been made worse by treatment and no untoward reactions have occurred.

Internal Myxedema.—Escamilla and his associates cite a case of hypothyroidism that showed ascites, cardiac, intestinal and bladder atony, secondary anemia, menorrhagia and associated carotenemia. The ascitic fluid was thought to be due to the hypothyroidism and showed a protein content above the average, but not as high as in some cases that have been reported previously. The cardiac observations were typical of myxedematous heart without decompensation. Atony of the bladder is thought to be more common than previously reported. The patient was followed over a period of thirteen months and all symptoms and signs showed improvement on thyroid therapy except the anemia, for the improvement of which iron was necessary in addition to the thyroid. An exploratory laparotomy performed for symptoms simulating partial intestinal obstruction showed no evidence of other etiology for the ascites. The authors suggest that the term "internal myxedema" would best describe the manifestations observed in their patient.

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Laryngeal and Esophageal Atavism in Man as Indicated by Probable Phylogenesis of Hypopharyngeal Receptacle, Concerned in the Act of Deglutition. L. Z. Fishman, Chicago.—p. 139.
*Hemorrhage in Lung Cancer: Fatal Case Following Bronchoscopy. F. L. Lederer, Chicago.—p. 157.
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*Tertiary Syphilitic Infiltrative Lesions of Nasal Mucosa. I. M. Lupton, Portland, Ore.—p. 199.
Microtia with Meatal Atresia, with Description of an Operation for Its Correction: Report of Two Cases. J. R. Hume and N. Owens, New Orleans.—p. 213.
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Present Status of Sinus Infection as an Etiologic Factor in Retrobulbar Neuritis. J. A. Fisher, Asbury Park, N. J.—p. 274.

Hemorrhage in Cancer of Lung.—Lederer believes that the emphasis on hemoptysis as a symptom of lung cancer, together with the presentation of case reports from the literature of fatal hemorrhage, serves to illustrate the possibilities of bronchoscopic interference in these cases. His experience, coupled with the proliferative and ulcerative changes found on postmortem examination in these pulmonary lesions, causes him to believe that similar fatalities have occurred before without special attention being directed to this possibility. The mechanical effort of a bronchoscopic observation, performed under the best conditions, may be sufficient strain to provoke a hemorrhage from a vessel whose walls are near a malignant mass and perhaps even invaded by the neoplasm. There can be no question as to the advisability of the bronchoscopic procedure, but it is well to bear in mind the possibility of hemorrhage.

Tertiary Syphilitic Lesions of Nasal Mucosa.—Lupton states that syphilitic infiltration of the nasal mucosa is a definite clinical entity and should be considered in the differential diagnosis of every doubtful lesion of the nasal mucosa. Because of the preponderance of vascular and lymphatic elements present in the mucosa of the direct airways of the nose, specific infiltrative lesions are more frequently found here than in the mucosa lining the accessory sinuses. Biopsy of the nasal mucosa is of extreme value to the clinician in questionable cases. Should the section show at least presumptive and supportive evidence of a chronic syphilitic rhinitis, it will have served its purpose well by suggesting a specific background. Negative blood examinations should not preclude the possibility of a specific infection in questionable lesions of the nasal mucosa, and in doubtful cases one should resort to careful study of the spinal fluid.

Annals of Surgery, Philadelphia

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Surgical Education: Undergraduate Teaching of Surgery. E. C. Cutler, Boston.—p. 497.
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Principles of Physiology Involved in Management of Increased Intracranial Pressure. W. Penfield, Montreal.—p. 548.
*Diagnostic Value of Phosphatase Determinations in Study of Bone Tumors. C. C. Simmons and C. C. Franseen, Boston.—p. 555.
Some Physiologic Principles Involved in Surgical Treatment of Gastric and Duodenal Ulcer. L. R. Dragstedt, Chicago.—p. 563.
Factors Governing Results of Surgical Treatment of Duodenal Ulcer. D. C. Balfour, Rochester, Minn.—p. 581.
Possibility of Malignancy as It Affects Treatment of Chronic Gastric Ulcer. W. J. M. Scott, Rochester, N. Y.—p. 586.
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*Results of Splenectomy in Childhood. G. C. Penberthy and T. B. Cooley, Detroit.—p. 645.
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Regional Ileitis. C. G. Mixter, Boston.—p. 674.
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*Colectomy for Adenomatosis and Pseudopolyposis: Report of Five Additional Cases. F. W. Rankin, Lexington, Ky.—p. 707.
Peptic Ulcer and Diseases of Biliary Tract in the Southern Negro: Influence of Diet. F. K. Boland, Atlanta, Ga.—p. 724.
Liver Resection: Case Report and Advantages of Radiocutting. M. B. Tinker, Ithaca, N. Y.—p. 728.
Congenital Obstruction of Bile Ducts. W. E. Ladd, Boston.—p. 742.
Stenosis of Bile Ducts by Contiguous Cicatricial Tissue. E. Eliot Jr., New York.—p. 752.
Treatment of Carcinoma of Ampulla of Vater. A. O. Whipple, W. B. Parsons and C. R. Mullins, New York.—p. 763.
Technic for Hepaticoduodenostomy. L. G. Guerry, Columbia, S. C.—p. 780.
Operative Repair of Sliding Hernia of Sigmoid. R. R. Graham, Toronto.—p. 784.

Diagnostic Value of Phosphatase in Bone Tumors.—Simmons and Franseen made observations on seventy-two cases of bone tumors of various types. They found that the plasma phosphatase reading is normal or low in nonmalignant bone tumors, normal or slightly elevated in multiple myeloma and in endothelial myeloma (Ewing sarcoma), normal or slightly elevated in the giant cell tumor of bone, considerably elevated in malignant disease metastatic in bone, and this fact may be of value in differentiating the multiple bone metastases of carcinoma from endothelial myeloma and multiple myeloma, and consistently high in osteogenic sarcoma of the osteoblastic type. In the osteolytic type (one case) it is approximately the same as in the group of metastatic carcinoma and giant cell tumor. Following surgical removal of an osteogenic sarcoma, the plasma phosphatase falls to normal in the course of from two to three weeks but again becomes elevated when there are demonstrable metastases. The recurrent tumor must attain an appreciable size before an increased plasma phosphatase activity can be demonstrated. In individuals dying of osteogenic sarcoma the activity diminishes shortly before death. Radiation treatment of an osteogenic sarcoma caused a temporary diminution in the

plasma phosphatase activity in one case. The plasma phosphatase activity bears a definite relation to that of the tumor tissue. The high phosphatase activity of the tumor tissue in osteogenic sarcoma is an example of a neoplastic cell continuing to produce the physiologic secretion of the normal cell from which it is derived. In one case of myositis ossificans the plasma reading was high at the time of osteoblastic activity in the lesion.

Circulatory Disturbances Caused by Intestinal Obstruction.—Gatch and Culbertson devised experiments to disclose the relation between intra-intestinal pressure and blood flow through the intestinal wall and to demonstrate the effect of various amounts of intra-intestinal pressure on its viability, motility, secretory activity and power of absorption. Their experiments demonstrated that: 1. Toxic material present in the lumen or wall of the obstructed intestine may reach the systemic circulation by way of the mesenteric vessels and by way of the peritoneal cavity. 2. Before the passage of any toxins by either route or under any conditions can occur, injury to the mucosa must exist. 3. Injury observed under clinical conditions to the mucosa of the obstructed intestine is due practically to distention and venous congestion. 4. Any passage of toxins from an intestine with devitalized mucosa must be transperitoneal as long as its circulation is stopped by pressure or obstruction; by way of the mesentery if its circulation is present. Distention causes a decrease in the blood flow through the intestinal wall, which is in direct proportion to the elevation of the pressure. It almost stops the blood flow when it reaches the level of the diastolic blood pressure. At this level it stops all absorption by way of the mesentery. Transperitoneal absorption then occurs. Distention sufficient to arrest the circulation of the intestine will devitalize the intestinal mucosa in from five to fifteen hours. This devitalization is demonstrated by the loss of selective absorption by the mucosa. It then permits the passage of toxic substances present in the normal and obstructed intestine. The absorption of materials that are normally absorbed by the intestine, except water and probably inert gases, proceeds at a relatively uniform rate in the presence of intra-intestinal pressures between zero and the diastolic blood pressure. Venous obstruction subjects the capillaries of the intestine to the full force of the systolic blood pressure. The circulation of the obstructed intestine is not greatly influenced by the increased intra-abdominal pressure that accompanies intestinal obstruction. The blood flow through distended loops must be lessened by any weakness of the systemic circulation. In the clinical management of patients suffering from advanced obstruction it seems desirable to deflate the intestine gradually before the operative relief of the obstruction is undertaken; otherwise the barriers against absorption of toxins by way of the peritoneum, and against their rapid absorption by way of the mesentery, may be broken down.

Splenectomy in Childhood.—As a large proportion of the cases of fetal erythroblastosis terminate fatally within a short time and as the character of the hemolysis seemed to Penberthy and Cooley strongly suggestive of perverted splenic activity, they performed splenectomy in two cases. Splenectomy promptly checked the rapidly progressing hemolytic anemia. Because of the gravity of the condition, they believe that the operation should be performed as soon as the diagnosis is made. Results are reported of splenectomies performed on children: in six for hemolytic icterus, in four for sickle cell anemia, in five for erythroblastic anemia, in six for hemorrhagic purpura, and in five for different types of "splenic anemia." The patients with hemolytic icterus seem to have recovered completely from the primary disorder, with no signs of recurrence. One has had trouble from postoperative adhesions and duodenal ulcer. In the cases of sickle cell anemia the condition has been little benefited by the operation; but the abdominal and joint crises have been alleviated, and in one case epileptiform attacks ceased after the splenectomy. Splenectomy in erythroblastic anemia has not appreciably altered the course of the anemia. It is followed by a remarkable, permanent increase in circulating normoblasts. The patients are considerably relieved by freedom from the weight of the greatly enlarged spleen and may live somewhat longer. Results in hemorrhagic purpura are nearly as good as in hemolytic icterus. Four patients recovered completely; one has had a single slight recurrence, and one, operated on during a very severe bleeding episode, died. Here, as in hemolytic icterus, the authors do not operate during crises, except as a last resort. Two patients exhibiting the syndrome with splenomegaly, leukopenia and anemia, often called the first state of Banti's disease, seem to have been cured by splenectomy. Of three having splenomegaly and anemia without the characteristic leukopenia, apparently secondary to infection, one has died and two have gone on to the late stages of the Banti syndrome with hemorrhage and cirrhosis.

Colectomy for Adenomatosis and Pseudopolyposis.—Rankin gives an additional report of a series of five cases of colectomy for diffuse adenomatosis and complicated chronic ulcerative colitis. Six cases were reported previously in which the entire colon and rectum were removed by multiple procedures. In four of the present cases the colon was removed down to the rectosigmoid juncture; in the other, total colectomy was done. In two cases of the chronic ulcerative colitis variety it is probable that the rectum will have to be removed subsequently, although the patients show marked improvement. In one case the reestablishment of the continuity of the gastrointestinal tract was carried out at the third stage following destruction of the rectal polyps by fulguration. There was one operative death following the second stage colectomy and in this case fulguration had been carried out on the rectal polyps and the plan was to transplant it subsequently at a third maneuver into the terminal ileum. The disappearance of diffuse rectal polyps following vigorous fulguration is surprising and encourages the belief that this plan, which has heretofore been considered an alternative one and available only when the rectal polyps were few, may be available to a great many more of these cases. Technical steps of importance are the preservation of the omentum in the chronic ulcerative colitis group and in the case of adenomatosis when there is no suggestion of a malignant condition. A second technical point of advantage is the method of handling the rectal stump, which turns in with difficulty in many of the polyposis cases and not at all in the chronic ulcerative colitis variety. The stump must be closed over as accurately as possible, covered with whatever tissues there are and, if there is any question of leakage, wrapped in iodoform gauze and a rubber tissue to establish a drainage track in the event that the suture line fails to hold. Of the eleven patients, one died eighteen months following the complete operation from recurrence of carcinoma, which had developed on the polyps and which was diagnosed at exploration. A second patient died two years later following a hysterectomy performed elsewhere. One patient died in the hospital following the second stage operation, and the remaining eight patients are alive and well and have all returned to their various occupations.

Archives of Neurology and Psychiatry, Chicago

34: 699-930 (Oct.) 1935

Functional Changes in the Brain of the Dog After Reduction of Cerebral Blood Supply: II. Disturbances of Conditioned Reflexes After Ligation of Arteries. L. A. Andreyev, Moscow, U. S. S. R.—p. 699.
*Otologic Findings in Oculogyric Crises: Contribution to Study of Supravestibular Pathways. S. L. Shapiro, Chicago.—p. 714.
Horner's Syndrome: Report of Ten Cases. R. N. DeJong, Ann Arbor, Mich.—p. 734.
Acoustic Imagination and Acoustic Hallucination. S. Parker and P. Schilder, New York.—p. 744.
Left-Handedness: Intercorrelations with Enuresis and Other Related Factors in So-Called Normal Children. J. J. Michaels, Boston, and Sylvia E. Goodman, Ann Arbor, Mich.—p. 758.
Proteins of Blood Serum in Cases of Essential Epilepsy. B. W. McKenzie, Salisbury, N. C., and E. W. McChesney, Chapel Hill, N. C.—p. 764.
Central Levels of Sensory Integration. J. G. Dusser de Barenne, New Haven, Conn.—p. 768.
Neurogenic Vesical Dysfunction: Alterations in Physiology of Micturition Due to Lesions of Nervous System. C. D. Creevy, Minneapolis.—p. 777.
Psychology and the University. H. A. Murray, Cambridge, Mass.—p. 803.
The Psychogalvanic Reflex: Applications to Neurology and Psychiatry. P. Solomon, Boston.—p. 818.

Otologic Changes in Oculogyric Crises.—Shapiro examined six patients, four men and two women aged from 21 to 39 years, suffering from cephalo-oculogyric crises. Four had tremors, rigidity and other evidence of parkinsonism; two presented no striking neurologic symptoms but were considered

by neurologists to have a probable postencephalitic state. Weakness of the muscles of convergence and accommodation or jerky voluntary movements of the eyes were present in five. Cochlear function was good in all. With the exception of one instance, no spontaneous vestibular abnormality was present. Vestibular stimulation revealed absence of, or diminished, susceptibility in all the patients, perverted or absent vertigo in two, perverted past pointing in one, absence of falling in one, who also showed perverted vertigo, and absence or impairment of nystagmus downward as induced by rotation with the head over the shoulder in two. Optic nystagmus in all cardinal directions could be induced in the intervals between attacks in all the patients. Five attacks were witnessed; there was upward or oblique deviation of the head and eyes in four and horizontal deviation in one. The ability to induce vestibular nystagmus while the patient was in a crisis was apparently proportional to the strength of the stimulus applied and the severity of the spasm. The facts available, including the postmortem studies, point definitely to the midbrain as the seat of the pathologic changes. None of the usual changes in the basal ganglions and tracts of this region that are commonly found in chronic parkinsonism can be held responsible, as these have been demonstrated many times in patients who during life had no ocular deviations. The views of Muskens, who regarded oculogyric crises as forced movements due to the interruption of pathways connecting the end stations of the secondary vestibular neurons to the pallidum, offer an explanation which, while based on experimental evidence, does not run counter to the clinical and anatomic data available. There are certain differences between the forced movements elicited by Muskens and other authors in animals and spasmodic deviations of the head and eyes in patients in the postencephalitic state. These can be readily understood in the light of the changing rôle of the vestibular apparatus in man as contrasted with that in animals and do not, by themselves, constitute an argument against the conclusions of Muskens.

Archives of Otolaryngology, Chicago

22: 403-536 (Oct.) 1935

Diagnosis and Differential Diagnostic Data on Specific Types of Suppuration in Petrosal Pyramid. S. J. Kopetzky, New York.—p. 403.
"Aural" or "Acoustic" Method of Treating Deafness. H. C. Ballenger and B. A. Patterson, Chicago.—p. 410.
Treatment of Hay Fever and Hyperesthetic Rhinitis by Ionization. L. M. Hurd, New York.—p. 416.
*Sinusitis Allergy and the Common Cold: Conception of Their Relationship. E. C. Sewall, San Francisco.—p. 425.
Causes of Faulty Interpretation of Roentgenograms of Sinuses. F. M. Law, New York.—p. 435.
Treatment of Pharyngeal Cancer: Fractional Dose Methods of External Irradiation. W. L. Mattick, Buffalo.—p. 440.
Xanthoma of Pharynx and Larynx. G. B. New, Rochester, Minn.—p. 449.
Late Changes in Mucosa of Frontal Sinuses and Nose of Dogs Following Ionization. B. J. McMahon, St. Louis.—p. 454.
Disease of the Hip Complicating Otogenic Sepsis. N. Leshin, Chicago.—p. 466.

Relationship of Sinusitis Allergy and the Common Cold.—The common cold, in Sewall's opinion, is always due to the pus-forming bacteria, and they are always activated by a filtrable virus. There must therefore be a never ending source of this virus. He believes that chronic sinusitis is the chief source, the endemic reservoir, for the perpetuation of the common cold. He does not mean that one must have chronic sinusitis to contract a cold but that chronic sinusitis must exist in some one for the pus germs lying in the chronically diseased mucosa to produce the virus capable of activating the same bacteria in others. The common pus-forming germs are the direct cause. They lie in the mucosa of the chronically diseased sinus. The lapse of immunity, associated with the factors that reduce resistance, allows them to become active. This activity is associated with the production of a virus that not only promotes the virulence of the sinus infection but, discharged as a secretion from the sinus, activates the same type of bacteria lying in a saprophytic state on the mucous membranes of that person. The result is the common cold engrafted on a chronic sinusitis. The virus secreted as nasal discharge will activate the same type of pus germs lying in a saprophytic state in the nose and throat of another person and cause an acute cold. Thus the vicious circle of the common cold appears never ending until such time as the endemic reservoir in the chronic sinus may be rendered innocuous or removed. The morbid changes that characterize a common cold depend on the histologic structure of the mucosa. One can distinguish three types of mucous membrane, the normal adult mucosa, the altered mucosa and the diseased mucosa. Each is subject to infection and determines the character of the inflammatory process.

California and Western Medicine, San Francisco

43: 249-320 (Oct.) 1935

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Psittacosis in Australia. K. F. Meyer, San Francisco.—p. 260.
Roentgenologic Examination of Stomach and Duodenum: Selection of Patients. B. R. Kirklin, Rochester, Minn.—p. 261.
Urologic Pathology: Its Incidence as Found in One Thousand Consecutive Autopsies at the Los Angeles General Hospital in 1933. G. F. Schenck, Los Angeles.—p. 266.
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Why the Medical Examiner, Instead of the Coroner? O. T. Schultz, Evanston, Ill.—p. 275.
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Canadian Medical Association Journal, Montreal

33: 353-474 (Oct.) 1935

Osler in America, with Especial Reference to His Baltimore Period. L. F. Barker, Baltimore.—p. 353.
Galactose Tolerance Test as an Aid to Diagnosis in Jaundice. E. H. Bensley, Montreal.—p. 360.
Study and Treatment of Cancer by Proteolytic Enzymes: Preliminary Report. H. C. Connell, Kingston, Ont.—p. 364.
Pleural Shock. W. F. Hamilton, Montreal.—p. 370.
Carcinoma of Cervix: Report on One Hundred Cases Treated at the Montreal General Hospital 1925-1929. Eleanor S. Percival, Montreal.—p. 374.
Stovarsol (Acetarsone) in Treatment of Congenital Syphilis. H. S. Mitchell, Montreal.—p. 377.
Dietary Factors in Health and Disease. W. R. Campbell, Toronto.—p. 379.
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Some Results Obtained in Treatment of Atrophic Rhinitis (Ozena). R. P. Wright, Montreal.—p. 392.
Avertin in Thyroid Surgery: Sixty Consecutive Cases. K. M. Heard, Toronto.—p. 395.
Multiple Intracranial Aneurysms. W. Magner, Toronto.—p. 401.
*Cellular Reaction to Silica. J. T. Fallon and F. G. Banting, Toronto.—p. 404.
Tissue Reaction to Sericite. J. T. Fallon and F. G. Banting, Toronto.—p. 407.
Treatment of Cancer of Larynx and Hypopharynx. R. S. Pentecost, Toronto.—p. 411.
Hemangioma with Fracture Through the Invaded Bone. J. H. Couch, Toronto.—p. 416.
Recent Investigations on Effect of So-Called Anti-Inflammatory Substances. M. Silberberg, Halifax, N. S.—p. 418.

Cellular Reaction to Silica.—Fallon and Banting studied the cellular reaction produced in rabbits by the subcutaneous injection of hand picked quartz that had been reduced to a fine powder. Weighed quantities of the material were added to distilled water so that each cubic centimeter contained 40 or 60 mg. of the powder. The suspension was autoclaved for thirty minutes and 0.5 cc. was injected subcutaneously under aseptic conditions into the external surface of the ears of twenty-four rabbits. For microscopic examination of the effects, sections of the ear were punched out with a large cork borer. The sections taken at ten minute intervals during the first sixty minutes showed a gradually decreasing amount of intercellular fluid. In the sections taken between thirty minutes and six days after the injection of quartz particles the reaction was typical of acute inflammation. The quartz particles appear to have a toxic effect on the polymorphonuclear and mononuclear leukocytes and small lymphocytes that enter the aggregations. All these cells are rapidly broken up in this location. Similar cells retain their normal characteristics when they remain in the surrounding areolar tissue. In as short a time as six days the quartz particles become so intimately mixed with cell débris that the aggregations have an appearance of organization. In the sections taken six days after the injection of quartz suspensions the microscopic picture is that of subacute inflammation. The areolar tissue on one side of the cartilage is extensively

infiltrated by polymorphonuclear and mononuclear leukocytes and fewer lymphocytes. The mononuclear leukocytes are seen in great numbers in the aggregations of silica particles, where they soon become disintegrated, leaving a framework of poorly staining cells and cellular débris throughout the masses of particles. It is along this framework that the histiocytes later advance into the central portions of the aggregations. Beginning as early as the sixth day and increasing as time goes on, the histopathologic picture gradually changes to that of chronic inflammation. The tissue histiocytes and adventitial cells of the blood vessels are mobilized, take on an ameboid appearance and advance toward the aggregations of quartz particles and cellular débris. Many of these cells are seen in mitotic division. Active phagocytosis of the cellular débris and engulfing of the quartz particles are carried on by the histiocytes until the entire mass, except for a few of the larger quartz particles, is taken up by the histiocytes. This process is complete in the smaller aggregations by the third, and, in the larger, by the sixth week. While changes are taking place in the aggregations there is an active granulation tissue formation in the surrounding areolar tissue. Numerous thin walled blood vessels are formed and carried into the nodules in long, thin strands of elongated, spindle-shaped cells. From the sixth week onward the microscopic picture is that of scar tissue formation. The phagocytic cells become elongated and spindle shaped. This process begins at the periphery and extends toward the central portions of the nodules. Hyalinization begins at the outer margin and follows to the center of the nodule. As this change progresses there is a proportionate decrease in cellularity. The cells disappear by a gradual diminution in size, and simultaneously there develops intercellularly a firm fibrous tissue, which ultimately forms the silicotic nodules. The cells in the central portions of some of the nodules break down and disappear, leaving irregularly rounded collections of a very finely granular substance. This has the appearance of caseous necrotic material and by micro-incineration is shown to contain a large amount of siliceous material.

Canadian Public Health Journal, Toronto

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Some Preventive Aspects of Mental Hygiene as Related to Schizophrenia. E. P. Lewis, Toronto.—p. 428.
Contribution of the Nutritionist to Health of the Preschool Child. Mildred D. Goodeve, Montreal.—p. 434.
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Indiana State Medical Assn. Journal, Indianapolis

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Indications for Cesarean Section: Analysis of Three Hundred and Twelve Cases. D. A. Bickel, South Bend.—p. 482.
Lighting. H. Row, Indianapolis.—p. 486.
Jaundice. L. R. Pearson, Indianapolis.—p. 489.
Closure of Postoperative Wound with Irradiated Petrolatum: Case Report. W. Deutsch Jr., Parker.—p. 490.

Iowa State Medical Society Journal, Des Moines

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*Carcinoma of Colon: Diagnosis and Symptomatology. E. E. Shaw, Indianola.—p. 528.
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Id.: Surgical Treatment of Carcinoma of Colon. N. B. Anderson, Des Moines.—p. 531.
Rocky Mountain Spotted Fever. C. F. Jordan, Des Moines.—p. 536.
Nephropexy, Indications for, Operative Procedure and Results. C. W. Losh, Des Moines.—p. 540.
The Undescended Testicle, with Especial Reference to Treatment with Gonadotropic Hormone and the Torek Operation. J. B. Priestley and R. Cohen, Des Moines.—p. 547.

Diagnosis and Symptoms of Carcinoma of Colon.—Shaw says that the symptoms and signs of carcinoma of the right half of the large intestine are not diagnostic but suggestive. They are: pain, usually a dull inconstant pain, fairly well localized to the right side; indigestion of a vague type; anemia and weakness, the anemia being marked, with a red count often near three million, a decreased hemoglobin and a picture suggestive of pernicious anemia; change of intestinal habit of the patient, whether constipation, diarrhea or alternation of the two; occult blood in the stool, which is a fairly constant finding, but melena is usually a late symptom in lesions of the right colon; a tumor mass in the right abdomen, usually movable and somewhat tender, which is often found and is the presenting symptom; loss of weight and cachexia as late manifestations, usually meaning a far advanced case, and roentgen observations. Signs and symptoms of carcinoma of the left half of the colon are: obstruction, either complete or partial; change in the intestinal habit, again the most constant symptom, being usually a progressive constipation; blood and mucus in the stools of practically all these patients; rumbling, visible peristalsis: the feeling and hearing of gas and liquid feces as they pass through the constricted portion of the colon, which is frequently noted and the patient may even be able to localize the lesion by these symptoms; a tumor mass, not often found owing partially to the smaller size of most of these tumors and also to the fact that the sigmoid is deeply situated and not easily palpated (rectal examination will reveal many of these tumors), and roentgen observations. In the differential diagnosis the most common conditions that cause confusion are chronic ulcerative colitis, tuberculous colitis, diverticulitis, appendical abscess and functional diseases of the colon. These are probably best treated for a short time as functional cases, after which a careful reexamination should be made for persistence of the defects.

Journal of Infectious Diseases, Chicago

57: 1-128 (July-Aug.) 1935

Studies on Nature of Bacteriophage: I. Extraction of Bacteriophage by Ether. J. D. LeMar and J. T. Myers, Omaha.—p. 1.
Id.: II. Artificial Production of Specific Lytic Agent Which Seems to Behave Like Bacteriophage. J. D. LeMar and J. T. Myers, Omaha.—p. 6.
Production of Amorphous Extrabacterial Substances in Bacterial Cultures: I. Observations with Oerskov's Milk Bacillus. L. Dienes, Boston.—p. 12.
Id.: II. Observations with Various Bacteria, Especially with Gram-Positive Aerobic Spore Bearing Bacilli. L. Dienes, Boston.—p. 22.
Goodner's Intradermal Pneumococcic Infection of Rabbits. J. A. Kolmer and Anna M. Rule, Philadelphia.—p. 46.
The Phases or Types of Haemophilus Pertussis. J. A. Toomey, Katherine Ranta, Lucile Robey and J. E. McClelland, Cleveland.—p. 49.
Bacteriostatic Action of Skatole on Gram-Negative Enteric Bacilli. R. P. Tittsler, L. A. Sandholzer and E. T. Callahan, Rochester, N. Y.—p. 57.
Simultaneous Immunization with Mixture of Ten Kinds of Laked Blood. Edna Delves, Chicago.—p. 61.
Bacteriostatic Action of Indole on Gram-Negative Enteric Bacilli and on Certain Cocci. R. P. Tittsler and L. A. Sandholzer, Rochester, N. Y.—p. 64.
Preparation and Antigenic Properties of Globins from Hemoglobins of Different Species. C. A. Johnson and W. B. Bradley, Chicago.—p. 70.
Natural Antibodies in Rabbit and Hereditary Resistance to Infections of Brucella Suis. M. R. Irwin and F. N. Bell, Madison, Wis.—p. 74.
*Rocky Mountain Spotted Fever: Results of Ten Years' Prophylactic Vaccination. R. R. Parker, Hamilton, Mont.—p. 78.
A Theory of Hapten Action. J. H. Lewis, Chicago.—p. 94.
Absorption of Bacteriophage by Salmonella. P. Levine and A. W. Frisch, Madison, Wis.—p. 104.
Behavior of Cholera and El Tor Vibrios Toward the Shwartzman Phenomenon. P. Vassiliadis.—p. 118.
*Production of Enterotoxic Substance by Bacteria. E. O. Jordan and W. Burrows, Chicago.—p. 121.

Rocky Mountain Spotted Fever Vaccine.—Parker states that the data from ten years' use of the Public Health Service vaccine for the prevention of Rocky Mountain spotted fever justify a broadening of the scope of previously published conclusions with regard to its prophylactic usefulness. The vaccine has definite value. The degree and duration of protection vary with the vaccinated person and with the degree of virulence of an infecting strain of spotted fever virus. The average person vaccinated in the spring retains a considerable degree of immunity during at least the remainder of that year. This degree of immunity is usually sufficient to afford full protection against the relatively mild strains of spotted fever but apparently is progressively less effective as the virus virulence is increased. The degree of protection against the highly fatal type is sufficient to ameliorate markedly the usual very severe course of infection and to ensure the recovery of most persons; the complete protection of occasional persons is not unlikely. Children

are perhaps better protected than adults, and among them full protection against virus strains of high virulence may be more frequent. If a person is infected during the vaccination period, there is a strong probability that the subsequent clinical course of the disease will be affected favorably, even in areas of high case fatality rate. In areas in which relatively mild infections prevail and the incubation period is prolonged, the administration of vaccine as soon as possible after tick bite may ameliorate an impending infection. This appears particularly probable in persons who have been vaccinated in previous years. This procedure is not recommended in areas of highly fatal infections in which the incubation period is short, unless the person has been previously vaccinated. It is probable that a considerable percentage of vaccinated persons carry an uncertain degree of immunity over into the second year, even against highly virulent virus. The degree of this residual immunity appears to be greater in persons who have been vaccinated two or more successive years. The evidence as to whether or not any degree of immunity is carried beyond the second year is less suggestive. Until more definite data are available, however, it is necessary that the vaccination of exposed persons be repeated each year and that three injections of 2 cc., instead of the usual two, be used in areas of high virulence, especially the first year that vaccine is given. Of persons vaccinated and infected the same year, those who have received vaccine two or more successive years appear to have greater resistance than those who have received vaccine only one year.

Production of Enterotoxic Substance by Bacteria.—Jordan and Burrows found that freshly isolated bacteria of various kinds (staphylococci, streptococci, Proteus, Bacterium coli, Bacterium aerogenes, Salmonella aertrycke) when grown under suitable conditions are capable of producing a substance that causes vomiting and other gastro-intestinal symptoms in monkeys. The use of a custard medium or the addition of starch to ordinary medium favors the production of the enterotoxic substance. By successive transfers on starch medium the property of producing enterotoxic substance was restored to a number of bacterial strains that were originally positive but that had long given negative results. Although the procedures described do not invariably result in the production of toxic filtrates, it has always been possible to restore this property eventually to a given strain by intensive and repeated attempts. Certain bacteria that had never yielded enterotoxic filtrates in previous laboratory tests gave positive results after they had been transferred on starch medium.

Maine Medical Journal, Portland

26: 135-150 (Sept.) 1935

The Tonsil Problem. T. A. Foster, Portland.—p. 139.
The Family Doctor and the State Tuberculosis Sanatorium. P. Wakefield, Fairfield.—p. 144.

Military Surgeon, Washington, D. C.

77: 115-176 (Sept.) 1935

The Early Development of Aviation Medicine in the United States. W. H. Wilmer.—p. 115.
The Present Need for Airplane Ambulances by the United States Army. C. L. Beaven.—p. 138.
Economical and Advantageous Method for Retaining Surgical Dressings. A. G. Hulett.—p. 146.

Missouri State Medical Assn. Journal, St. Louis

32: 387-424 (Oct.) 1935

The Old and the New in Management of Male Gonorrhea: Clinical Review. A. L. Stockwell, Kansas City.—p. 387.
Tuberculous Uveitis. C. S. O'Brien, Iowa City.—p. 392.
Differential Diagnosis of Imaginary Diseases of Ear, Nose and Throat. O. Gilliland, Kansas City.—p. 394.
Hereditary Blindness in Missouri. H. D. Lamb, St. Louis.—p. 398.
Radiation Therapy in Treatment of Disease. C. E. Virden, Kansas City.—p. 400.
Hydrocephalus (Dura-Ureteral Drainage). W. J. Gallagher, St. Louis.—p. 402.
The Changing Practices in Infant Feeding. F. C. Neff, Kansas City.—p. 406.
Physical Factors in Development of Psychoses. G. W. Robinson, Kansas City.—p. 408.
Early Diagnosis in Abdominal Diseases. F. W. Bailey, St. Louis.—p. 410.
Calcified Pus in Peritonsillar Abscess: Report of Case. A. L. Meredith, Prairie Home.—p. 413.

Public Health Reports, Washington, D. C.

50: 1293-1328 (Sept. 20) 1935

Maternity Nursing Service of Bicounty Health Department: Brunswick-Greensville Health Administration Studies Number Five. Pearl McIver.—p. 1293.

50: 1329-1368 (Sept. 27) 1935

Blacktongue-Preventive Value of Seven Foodstuffs. W. H. Sebrell, G. A. Wheeler and D. J. Hunt.—p. 1333.

50: 1369-1400 (Oct. 4) 1935

Dust Storms and Their Possible Effect on Health, with Especial Reference to the Dust Storms in Kansas in 1935. E. G. Brown, Selma Gottlieb and R. L. Laybourn.—p. 1369.
Milk Control and the United States Supreme Court. J. A. Tobey.—p. 1384.

Southern Surgeon, Atlanta, Ga.

4: 297-378 (Oct.) 1935

Suction Treatment for Undescended Testicles. E. G. Ballenger, O. F. Elder and H. P. McDonald, Atlanta, Ga.—p. 297.
Predicting Type of Peritonitis Which Will Develop from Given Case of Appendicitis. A. E. Hertzler, Halstead, Kan.—p. 305.
Lymphogranuloma Inguinale. W. B. Marbury, Washington, D. C.—p. 312.
Lingual Check Valve: Observations on Inadequate Treatment of Asphyxia. C. Jackson, Philadelphia.—p. 323.
Management of Incompletely Descended Testis. H. Cabot, Rochester, Minn.—p. 331.
Endometriosis: Clinical Study. C. H. Tyrone, New Orleans.—p. 345.
Surgery of Arthritis. W. C. Campbell, Memphis, Tenn.—p. 353.

Virginia Medical Monthly, Richmond

62: 361-418 (Oct.) 1935

Consideration of Certain Less Common Forms of Heart Disease. F. A. Willius, Rochester, Minn.—p. 362.
*Treatment of Perforated Duodenal Ulcer with Simple Closure and Jejunostomy. A. S. Brinkley, Richmond.—p. 366.
Amaurotic Family Idiocy: Three Case Reports. G. B. Arnold, D. L. Harrell Jr. and H. L. Riley Jr., Colony.—p. 372.
Multiple Bladder Stones with Unusual Symptoms: Case Report. T. B. Washington, Richmond.—p. 374.
Anal Fissure and Its Nonoperative Treatment. M. Silbermann, Boston.—p. 376.
Lymphogranuloma Inguinale. R. F. Simms, Richmond.—p. 380.
Need for Essential Changes in Preparation of Nurses for Service to Community. Ethel M. Smith, Craigsville.—p. 387.

Treatment of Perforated Duodenal Ulcer.—Brinkley employed simple closure of the perforation and jejunostomy with drainage of the culdesac in his last five cases of acute perforated duodenal ulcer, in which operation was performed during the last seventeen months. There was one death. The postoperative treatment consists in elevating the head of the bed 12 inches; 500 cc. of a 5 per cent solution of dextrose is immediately given intravenously and by the flush method as proctoclysis, and gastric lavage with a warm solution of sodium bicarbonate is given with the duodenal tube from every four to six hours for the first twenty-four hours and continued if necessary. Every four hours 1 cc. of digifoline or digitalone is given hypodermically, and one-third grain (0.022 Gm.) of a mixture of opium and alkaloids every four to six hours if required. Fluids are withheld by mouth. Feedings every two hours are started through the jejunostomy tube at once. For the first two or three days 2 ounces (60 Gm.) of predigested beef in 2 ounces (60 cc.) of warm water is given at one feeding, and 4 ounces (120 cc.) of peptonized milk at the next feeding. After this period a more liberal diet is allowed. Water is given between feedings. The drainage tube is removed on the third to the fifth day. Water is allowed by mouth in small quantities on the fifth day, liquids on the eighth to the tenth day. The catheter and sutures are removed on the tenth to the twelfth day and an ulcer diet is started on the fourteenth day. The patient is usually allowed to sit up in bed at the beginning of the third week and is discharged from the hospital during the third or fourth week.

Wisconsin Medical Journal, Madison

34: 701-792 (Oct.) 1935

What About the Future? R. M. Carter, Green Bay.—p. 713.
Action of Roentgen Rays on Tuberculous Processes. A. U. Desjardins, Rochester, Minn.—p. 719.
Prevention and Treatment of Complications Following Cholecystectomy. J. M. Hayes, Minneapolis.—p. 731.
Pitfalls in Abdominal Surgery. V. F. Marshall, Appleton.—p. 736.
Carcinoma of Colon. F. A. Stratton, Milwaukee.—p. 741.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Bristol Medico-Chirurgical Journal

52: 143-190 (Autumn) 1935

Evolution of British Orthopedics. H. Rolleston.—p. 143.
Diseases of Lacrimal Sac. A. E. Iles.—p. 151.
Treatment of Lacrimal Obstruction. G. R. Scarff.—p. 159.
Thomas Marryat, M.D.: Memoir. A. S. MacNalty.—p. 165.

British Medical Journal, London

2: 565-608 (Sept. 28) 1935

Tuberculosis of Kidney in Childhood. O. L. Addison.—p. 565.
Surgery of the Pancreas. H. Upcott.—p. 567.
Radium Treatment of Nevi. N. S. Finzi.—p. 571.
Incidence of Skin Conditions in Australia. H. Lawrence.—p. 572.
*Lymphosarcoma of Stomach: Case. M. A. Hameed.—p. 576.
Strangulation of Traumatic Diaphragmatic Hernia Occurring Nine Months After Original Accident. R. D. B. Wright.—p. 577.
Antemortem Digestion of Esophagus. A. Lyall.—p. 578.
Mastoid Radiology. W. O. Lodge.—p. 579.

Lymphosarcoma of Stomach.—The symptomatology of the case that Hameed presents did not indicate a new growth of the stomach, as it consisted only of intense anemia, optic neuritis and some wasting of the muscles of the extremities. Whether the neuritis was due to a toxic condition or to an actual infiltration in the spinal cord and its nerves could not be ascertained, as permission to remove the spinal cord was withheld. There was leukopenia and some relative increase in lymphocytes. The former condition can be accounted for by aplasia of the bone marrow. Finally, pseudoleukemia of the gastro-intestinal tract is rarely an acute condition and shows no infiltration in organs other than the lymph nodes, while the onset of the condition was somewhat acute and showed infiltration in other organs as well, including the pancreas. Hodgkin's disease was excluded on account of the absence of increased reticular fibers and of large mononuclear and giant cells. Moreover, in Hodgkin's disease enlargement of lymph glands is a common feature, which was not present in the author's case. The hyperchromicity, mitotic division of the cells and extreme degree of cellular infiltration, both in the stomach and in other organs, made the diagnosis of lymphosarcoma quite clear. Metastatic deposits in the liver, the Peyer's patches of the small intestine, the pancreas, kidneys, spleen and medullary cavities of the long bones were interesting features. The fact that the mesenteric and the lymph glands along the greater and smaller curvatures of the stomach were not appreciably enlarged pointed toward the spread of the disease through the blood vessels and not through the lymphatics. The stomach, being the primary organ affected, was infiltrated from the cardia to the pylorus and gave rise to polypoid growths at places.

Clinical Science, London

2: 1-148 (Sept. 30) 1935

Further Observations on Vessels and Nerves of Rabbit's Ear, with Especial Reference to Effects of Denervation. R. T. Grant, with successive collaboration of P. D. Camp, A. Graybiel and P. Rothschild. —p. 1.
Reliability of Clearance Tests for Renal Efficiency. C. L. Cope.—35.
Manner in Which Necrosis Arises in the Fowl's Comb Under Ergot Poisoning. T. Lewis, with collaboration of B. Gelfand.—p. 43.
Observations on Capillary Permeability in Cases of Nephritis and of Hepatic Cirrhosis with Hypoproteinemia. F. H. Smirk.—p. 57.
*Dietetic Factor Determining Glucose Tolerance and Sensitivity to Insulin of Healthy Men. H. P. Himsworth.—p. 67.
*Diet of Diabetes Prior to Onset of Disease. H. P. Himsworth and E. M. Marshall.—p. 95.
*Diet and Increase of Diabetes Mellitus. H. P. Himsworth.—p. 117.

Dietetic Factor Determining Dextrose Tolerance and Sensitivity to Insulin of Healthy Men.—Himsworth describes experiments on healthy human subjects concerning the effect of change in the diet on the dextrose tolerance and the sensitivity to insulin. In healthy subjects the improvement in dextrose tolerance, consequent on the change from a low-carbohydrate high-fat diet to a high-carbohydrate low-fat diet, is not determined by change in the calory value or ketogenic-antiketogenic ratio, or change in the fat or protein content of the diet, but solely by the amount of carbohydrate in the diet. On the basis of these experiments the author has constructed a "determination curve of dextrose tolerance" that expresses for healthy subjects the relationship between the change in sugar tolerance and the change in the amount of dietary carbohydrate. The efficiency with which a standard dose of crystalline insulin acts on the blood sugar is determined by the carbohydrate content of the diet so that the greater the amount of carbohydrate in the diet the greater the sensitivity of the organism to insulin. The relationship in healthy subjects between the change in insulin sensitivity and the change in the amount of carbohydrate in the diet can be expressed as a "determination curve of insulin sensitivity." A correlation between the change in dextrose tolerance and the change in insulin sensitivity is such that it can be expressed as a straight line inclined at an angle of 45 degrees to the abscissa. The development of insulin sensitivity is independent of the dose of insulin used as the standard test dose. The quantity of pancreatic insulin brought into action in response to a standard dose of dextrose is constant in amount whatever the degree of tolerance indicated by the blood sugar curve. The change in dextrose tolerance consequent on the change in composition of the diet from a low-carbohydrate high-fat to a high-carbohydrate low-fat diet is completely accounted for by the change in sensitivity of the individual to the insulin secreted by his own pancreas. The bearing of these results on the apparently acute development of diabetes mellitus in man and on the dietetic therapeutics of this disease is discussed.

Diet Prior to Onset of Diabetes.—Himsworth and Marshall compared the diet of 143 diabetic patients prior to the onset of their disease with the diet of two comparable groups (137 and 121 persons) of normal subjects. The qualitative method, which by questioning aimed at discovering whether the diet differed from the normal, and the quantitative method in which the subjects, from foodstuffs of known composition, chose a day's intake in food, which was then expressed in terms of carbohydrate, protein and fat, were the methods employed in determining the nature of the diet. Both methods reveal that the majority of diabetic patients, prior to the onset of diabetes, prefer diets containing an excessive proportion of fat, and that a smaller number of these persons than normal subjects prefer diets containing an excessive proportion of carbohydrate foods. The diabetic patients chose diets of greater calory value and containing larger amounts of carbohydrate, protein and fat. This increased consumption arises possibly from an error inherent in the method used. The difference between the diabetic and normal subjects in the amount of fat consumed is, however, from a statistical point of view, so much greater than the difference in consumption of carbohydrate and protein that significance may be attached to it. The diet of diabetic patients before the onset of the disease, in comparison with the diet of normal subjects, contains the same proportion of protein, a diminished proportion of carbohydrate and an increased proportion of fat. Similar diets impair sugar tolerance and insulin sensitization in nondiabetic subjects, and the ingestion of such a diet by a potentially diabetic individual would favor the appearance of the disease. The habitual ingestion of a diet containing a diminished proportion of carbohydrate may cause progressive permanent impairment of sugar tolerance and insulin sensitivity, so that diabetes mellitus results in the course of time.

Diet and Incidence of Diabetes Mellitus.—Himsworth presents data showing the different diets eaten by different races, nations and social classes throughout the world and makes a correlation between dietary preference and the incidence of diabetes mellitus. The incidence rate of diabetes mellitus has been assumed to be reflected by the mortality rate. The available data do not suggest that excessive consumption of sugar and overindulgence in alcohol play a part in the etiology of diabetes mellitus. The data with regard to the total quantity of food eaten show that there is no definite correlation between the rise in the incidence of diabetes and overeating. Prediabetic obesity is an effect of the type of diet eaten. A close correlation exists between the incidence of diabetes mellitus in different races, nations and social classes and the proportionate composition of the diet. A high proportion of carbohydrate and low proportion of fat is found in all cases to be associated with low diabetic incidence, while a low pro-

portion of carbohydrate and a high proportion of fat are associated with a high incidence. The available information suggests that the different diets chosen vary little in calory value. The incidence of diabetes is high when relatively low-carbohydrate diets are taken, and the incidence is low when relatively high-carbohydrate diets are chosen. In view of previous results, the ingestion of a relatively low-carbohydrate diet is the factor determining the onset of diabetes mellitus in individuals with a predisposition to the disease, and, if a high-carbohydrate diet had been taken, a considerable proportion of these persons would not have developed diabetes.

Lancet, London

2: 753-810 (Oct. 5) 1935

Treatment of Undescended Testis. E. D. McCrea.—p. 753.
Neurotropic Virus Diseases. E. W. Hurst.—p. 758.
Amnesia Following Head Injuries. W. R. Russell.—p. 762.
Duodenocolic Fistula Simulating Idiopathic Steatorrhea. J. Mindline and M. L. Rosenheim.—p. 764.
*Allergic Factor in Etiology of Nonspecific Colitis. Dorothy C. Hare.—p. 767.

Allergic Factor in Etiology of Nonspecific Colitis.—From a study of thirty-eight cases, Hare believes that there is a possibility that allergic factors are of importance in the etiology of nonspecific colitis. Information was sought in these cases with regard to the occurrence of the allergic disorders of asthma, hay fever, spasmodic rhinorrhea, migraine, bilious attacks, urticaria, eczema and epilepsy. Food idiosyncrasies and appetite in childhood were also the subject of inquiry. The incidence of the allergies among the general population was studied by Bruce Pearson (1933), who found that 26 per cent of healthy adults have either a personal or a familial history of allergy. It may therefore be significant that among these colitis patients as many as thirty-two of thirty-eight patients, 85 per cent, gave a personal or family history of allergy. The patients studied were all women and, with two exceptions, were treated as inpatients; the usual methods of investigation and diagnosis were employed, including sigmoidoscopy, roentgenoscopy and stool examinations. The diagnosis of this form of colitis has been based on the appearance of the mucous membrane, which is abnormally granular and congested and bleeds readily on touch; actual ulceration may or may not be present. The term nonspecific colitis is used to include "ulcerative" and "hemorrhagic" colitis but not "mucomembranous" colitis. Roentgen examination may show little change in the early cases and diagnostic appearances in later conditions. The stools contain blood and mucus during some part of the attack.

Tubercle, London

16: 433-480 (July) 1935

Prevention of Tuberculosis in Childhood by Methods of Separation. G. G. Kayne.—p. 433.
Series of Eighty-Four Cases of Pulmonary Tuberculosis in Children Aged up to Fifteen Years. J. R. Beal.—p. 452.
Exhibiting Libermeister's Syndrome, Following on Air Filling of Left Pleural Cavity: Case. A. W. Smith.—p. 454.
Relation of Allergy to Immunity. F. M. Pottenger.—p. 458.

17: 1-48 (Oct.) 1935

Condition of Lung After Hemoptysis. O. Országh.—p. 1.
*Squamous Carcinoma of Lung Occurring in Asbestosis: Two Cases. S. R. Gloyne.—p. 5.
Prevention of Tuberculosis in Childhood by Methods of Separation. G. G. Kayne.—p. 10.
*Massive Tuberculosis of Tonsils: Case. B. Hudson and F. L. Wollaston.—p. 30.
Clinical Value of Chest Radiogram. K. Dunham.—p. 33.

Squamous Carcinoma of Lung in Asbestosis.—Gloyne reports two cases of squamous carcinoma of the lung. One patient survived nine years after an exposure of eight years to asbestos dust as a spinner; the other lived for fifteen years after exposures of six months and thirteen months. In both cases the occupational history went back to the war years; the malignant lesions were very small and were not recognized during life. The carcinomas appeared to arise in the wall of a small bronchus and to grow into and extend along the lumen. Serial sections suggested that the growths were a continuous prolongation rather than a series of isolated units, though it was not possible to indicate a definite starting point. These prolongations were hollow in places, showing a degenerating layer of cells round a central empty space and an external ring of keratinized squamous cells. The growths were in a portion of lung in which the asbestosis was fairly advanced. The advancing prolongations of the neoplasms insinuated themselves between the collagenous fibers of the pneumoconiosis. Death had occurred before the tumor had attained a size capable of affecting vital parts. Secondary deposits or even extension to mediastinal glands had not occurred. Pigment, asbestos fibers and asbestosis bodies were pushed aside by the advancing growth. The true squamous nature of the tumor was evident from the presence of prickle cells, keratinization and cell nests. The asbestosis, though fairly advanced, was not sufficiently advanced to cause death. A small meningeal hemorrhage terminated life in the first case. Compared with the squamous carcinoma of the lung in general, as it reaches the postmortem room, the growths were unusually small. The author makes the suggestion that in asbestosis a small tumor turns the scale, just as bronchitis with early bronchopneumonia will do, probably as a result of toxemia. He has observed a similar occurrence in a case of oat cell carcinoma with asbestosis.

Massive Tuberculosis of Tonsils.—Hudson and Wollaston cite a case of tuberculosis of the tonsils in which, in view of the history of frequent attacks of tonsillitis during the last two years with enlargement of the glands, each lasting about a fortnight, and the microscopic appearance of the tonsils, it seems possible that the tonsils were the primary lesion and that the lung became infected from them during attacks of bronchitis. From the rapidity with which the disease spread in the lung there can have been very little resistance to tuberculosis, such as would have been the case if the present infection was a reactivation of an old childhood focus in the tracheal glands. At present there are no signs of infection anywhere else, and now that the tonsils have been removed and the diseased lung is collapsed successfully the prognosis should be fairly good, though sudden activity of the miliary type of tuberculosis or a meningitis is always a possibility.

Japanese Journal of Experimental Medicine, Tokyo

13: 357-590 (Aug. 10) 1935

Some Influences of Rapid Change of Temperature on Living Organism: I. Influence on Protein Metabolism. A. Kashiwazaki.—p. 357.
Id: II. Influence on Residual Nitrogen in Blood. A. Kashiwazaki.—p. 401.
Id.: III. Influence on Blood Picture. A. Kashiwazaki.—p. 419.
Studies on Mitochondria and Metachondria on Golgi's Apparatus and on Silver Granules of Lieberkühn's Gland Cells of Intestine of White Rat. Y. Sawada.—p. 441.
Clinical and Experimental Studies on Hookworm Infection. M. Yamasaki.—p. 457.
Influence of Muscular Exercise on Blood Sugar Content and Few Other Changes in Animals Kept on Different Kinds of Diet. E. Takeda.—p. 471.
Influence of Muscular Exercise on Blood Figure of Experimental Animals Kept on Different Kinds of Diet. E. Takeda.—p. 511.
Influence of Muscular Exercise on Blood Fat Content of Dogs Kept on Different Kinds of Diet. E. Takeda.—p. 521.
Influence of Muscular Exercise on Residual Nitrogen Content of Blood on Animals Kept on Different Kinds of Diet. E. Takeda.—p. 529.
Influence of Muscular Exercise on Carbon Dioxide Combining Capacity of Blood Plasma of Animals Kept on Different Kinds of Diet. E. Takeda.—p. 535.
Studies on Experimental Chagas Disease. S. Niimi.—p. 543.
Size of Typhoid and Dysentery Bacteriophages Estimated by Gradocol Membrane of Elford. H. Yaoi and K. Sato.—p. 565.
*Experimental Study on Virus of Measles. T. Taniguchi, M. Hosokawa, S. Kuga and K. Terada.—p. 577.

Experimental Study on Virus of Measles.—Taniguchi and his co-workers isolated five strains of a kind of virus by serial intratesticular inoculations into rabbits with nasopharyngeal washings or blood from patients having measles. Three strains were examined immunologically and are proved to be identical. They are clearly distinguished from the viruses of vaccinia, varicella, herpes simplex, pemphigus and encephalitis from the immunologic standpoint. The virus is also differentiated from the virus III. A specific virulicidin against this virus is contained in the convalescent serum of measles. When susceptible persons are inoculated with this virus, typical measles supervenes. The elementary body that is assumed to be the virus of this experimental measles is demonstrated. The authors therefore conclude that the virus which they conveyed to the rabbit was most probably that of measles, and that the elementary body encountered must have been the virus of measles.

Presse Médicale, Paris

43: 1425-1448 (Sept. 14) 1935

Anatomopathologic Study of Mediterranean Exanthematic Fever. J. Piéri and M. Mosinger.—p. 1425.
*Existence of Tuberculous Ultravirus. H. Plotz.—p. 1428.
Survival of Dog Having Complete Pancreatic Fistula. J. Bottin. —p. 1430.

Tuberculous Ultravirus.—Plotz calls attention to the fact that the term ultravirus is a misnomer when coupled with "tuberculous," since its properties are not comparable to those of the true ultravirus. For example, a lasting immunity usually succeeds infection with the latter; they are filtrable, invisible, and can be cultivated only in the presence of living cells. The "tuberculous ultravirus," however, is active only in high doses and it does not regularly produce disease, specific lesions or immunity. The filtrates are not always active and cannot be cultivated in the presence of living cells. There are, moreover, numerous evidences that the tubercle bacillus can pass through the filters. It thus becomes unnecessary to postulate a filtrable form and, in the author's opinion, no convincing experimental proof of this form has yet been advanced.

43: 1473-1488 (Sept. 21) 1935

Repeated Thoracoplasties. P. Dreyfus-le Foyer.—p. 1473.
Solution to Physiologic Problem of High Altitudes: Aerial Diving Apparatus. M. Rosenstiel.—p. 1476.
*Why Is Tuberculous Infection Allergizing and not Vaccinating? R. Pons.—p. 1477.

Allergy and Immunity in Tuberculosis.—Pons discusses the factors determining the primarily allergic nature of tuberculosis. The virulent diseases which liberate most protein are the more immunizing; those liberating less protein are the more sensitizing or allergizing. The latter condition is largely fulfilled by tuberculous infection. The proteins of Koch's bacillus are without invasive powers in the well organism, and experience has shown that they are good anaphylactic and poor immunizing reactors. More than any other disease, tuberculous infection provides the conditions necessary for good sensitization: discrete infection; local growth of the organism which does not favor resorption of the microbial proteins; organism poor in proteins, and, contrary to most other infections, long in vivo life of the bacillus.

Archivio Italiano di Chirurgia, Bologna

40: 649-756 (July) 1935. Partial Index

Diagnosis and Treatment of Peptic Ulcer Perforated into Free Peritoneum. G. Pototschnig.—p. 649.
Bullet Retained in Brain (Occipital Lobe): Case. A. Violato.—p. 673.
*Carcinoid of Stomach: Case. V. Pettinari.—p. 695.
*Behavior of Epinephrine in Blood After Operation: Determination by Viale's Reaction. M. Teppati.—p. 709.
Conservative Operation for Controlling Postoperative Renal Hemorrhage. A. Slaviero.—p. 727.

Carcinoid of Stomach.—Pettinari's is the sixth case of gastric carcinoid reported in the literature and the first in which operation was performed and histologic study of the tumor made. The tumor was at the pyloric region, giving a picture of pyloric obstruction. The patient, aged 47, was discharged in a satisfactory condition two weeks after a gastroduodenal resection. The tumor proved to be seated either in the thickness of the gastric wall or under the mucous membrane, which was not involved in the process. It was made up of polymorphic epithelial cells and of some argentophil cells similar to those that exist in intestinal carcinoid. Gastric carcinoid is small, is of slow evolution and does not produce general disturbances except of a mechanical nature due to its localization, as happened in the author's case. The histogenic theory that attributes the origin of intestinal carcinoid to a proliferation of embryonic remains of aberrant epithelium seems plausible in explaining the origin of gastric carcinoid in which aberrant epithelial cells probably existed in the thickness of the gastric walls.

Behavior of Epinephrine in Blood After Operation.—Teppati studied the behavior of Viale's reaction, for the determination of epinephrine in the blood, in forty-four patients after several operations. The withdrawal of blood for the determination was made before the operation, shortly after it and then six, twelve and twenty-four hours later. The following changes were observed: increase of epinephrine in the blood of patients in whom the operation was performed with ether anesthesia, and transient decrease, followed by increase, in the blood of those in whom the operation was performed with spinal anesthesia (hydrochloride of benzoyldimethylaminomethylpropanol—procaine hydrochloride). It did not change in patients who were given local anesthesia. All but one of the patients in the group recovered. The patient who died had a gastro-entero-anastomosis performed with ether anesthesia and had hypo-epinephrinemia for the four days during which she survived the operation.

Semana Médica, Buenos Aires

42: 897-968 (Sept. 26) 1935. Partial Index

Heine-Medin's Disease. A. M. Marque.—p. 897.
*New Chromatic Reaction for Hexoses and Their Polymeric Compounds: Its Application to Colorimetric Determinations of Dextrose in Blood. J. A. Sánchez.—p. 914.
New Conceptions on Anatomy and Symptomatology of Coronary Territories: Clinical Importance. G. Bosco.—p. 919.
Multiple Osteogenic Exostoses: Cases. I. G. Moreno, R. E. Millán and A. Dumm.—p. 924.

Chromatic Reaction for Hexoses.—Sánchez discovered a new colorimetric microreaction that is specific for the hexoses and their polymeric compounds, especially dextrose. It consists in producing a pink color in a mixture made up by adding 5 cc. of a 1:5,000 hexose solution to 15 cc. of concentrated sulfuric acid. The color appears during the reaction, becomes intensified a few minutes later and persists for several days. The determination of dextrose in the blood is done by comparing the color of the blood serum contained in the "problem tube" with that of the solution of dextrose contained in each of five tubes, numbered from 1 to 5, which form the colorimetric scale. The problem tube and those of the colorimetric scale are of the same caliber. Each of the latter contains a mixture made up of 5 cc. of a homogeneized solution in 15 cc. of concentrated sulfuric acid, placed in the water bath at 100 C. for five minutes and then cooled. However, while the solution in the "problem tube" contains 0.5 cc. of the blood serum (previously deprived of its albumin and diluted in the proportion of 0.5 cc. of serum to 4.5 cc. of distilled water), that in the tubes of the scale contains 0.1, 0.2, 0.3, 0.4 and 0.5 cc., respectively, of a 1:1,000 solution of dextrose and 1 cc. of blood serum (previously deprived of its dextrose by heating the whole blood from which it was taken at 37 C. for twenty-four hours, and then of its albumin). The colors in the tubes of the scale, from 1 to 5, represent 0.2, 0.4, 0.6, 0.8 and 1 Gm. of dextrose per thousand cubic centimeters of blood. The author performed the reaction on blood serum taken from whole blood heated at 37 C. for twenty-four hours, and from blood deprived of fibrin and globules and then heated. He found that while whole blood loses its dextrose in less than twenty-four hours by glycolysis, the blood serum that was heated by itself, without fibrin or globules, retains dextrose for several days. This was proved by the results of the test, which were negative in the former and positive in the latter. The intensity of the color in the second case did not change for several days. The author believes that his results confirm those reported by Lepine and Siebert, according to whom diastases and enzymes of a glycolytic nature exist in the fibrin and globules of the blood, but not in the blood serum.

Beiträge zur klinischen Chirurgie, Berlin

162: 177-336 (Sept. 14) 1935. Partial Index

Ether Concentration in Blood of Human Subjects in Course of Anesthesia and Its Significance for Determination of Alcohol Content of Blood. J. Koller.—p. 177.
Nailing in Operative Treatment of Fracture of Head of Humerus. O. Voss.—p. 190.
*Treatment of Postoperative Intestinal Paralysis. G. Loewe and J. Herbrand.—p. 201.
Vitamin D and Callus Formation. J. Marx.—p. 213.
Transfusion of Noncoagulable Blood. A. Christ.—p. 268.

Treatment of Postoperative Intestinal Paralysis.—Loewe and Herbrand show that the intestinal peristalsis is regulated by nervous and hormone actions. In discussing the

treatment they point out that the great number of suggested remedies indicates the absence of an entirely satisfactory one. In view of this fact they resorted to treatment with a posterior pituitary preparation that influences the vascular system and the intestine. They report a number of cases in which they used this preparation with good success. Strictly individualized dosage stimulated the peristalsis and the intestinal evacuation even in the severest cases of intestinal atony, without causing circulatory disturbances or impairing the general condition. The clinical observations on the efficacy of the pituitary preparation were corroborated by roentgenologic studies. In serial roentgenologic examinations it was observed that, a few minutes after the injection of smallest amounts, the peristalsis increased and reached its maximum after from ten to fifteen minutes. The authors reach the conclusion that this posterior pituitary preparation is an excellent remedy for the stimulation of the disturbed peristalsis.

Klinische Wochenschrift, Berlin

14: 1449-1488 (Oct. 12) 1935. Partial Index

Glycolysis Under Influence of Deuterium Oxide. W. Brandt.—p. 1453.
*Blood Serum, Blood Protein Bodies and Vitamin C. E. Schneider and E. Widmann.—p. 1454.
*Occurrence of Basophilic Cell Infiltration in Neurohypophysis in Hypertensive Conditions. C. G. Ahlström.—p. 1456.
Treatment of Allergy in Bronchial Asthma. L. Hofbauer.—p. 1467.
Determination of Blood Diastase for Recognition of Pancreatic Diseases. L. Bogendörfer, H. Kramer and W. Pape.—p. 1469.
*Treatment of Colitis Gravis with Cevitamic Acid. G. Hetényi.—p. 1470.

Administration of Vitamin C.—Schneider and Widmann describe clinical observations and animal experiments on the basis of which they reach the following conclusions: 1. The therapeutic administration of vitamin C produces, although not regularly, a decrease in the globulin content and an increase in the albumin content of the blood, accompanied by a reduction in the sedimentation speed of the erythrocytes. 2. The vitamin C content of the blood seems to be higher in young persons than in older ones. Studies on the serum do not definitely indicate the presence of a hypovitaminosis. 3. The simultaneous administration of thyrotropic hormone of the pituitary and of vitamin C increases the size and weight of the adrenals, which is due to an increase not in the cortex but in the medullary substance.

Basophilic Cell Infiltration in Neurohypophysis in Hypertensive Conditions.—Ahlström points out that Cushing observed in eclampsia, essential hypertension, arteriosclerosis and basophil adenomas of the anterior hypophysis a more or less severe invasion of basophilic cells in the neurohypophysis, an invasion that originated in the intermediate lobe and extended into the tissues of the posterior lobe. On the basis of these observations, Cushing advanced the theory that this infiltration is the morphologic manifestation of an increased secretion of vasopressive hormones of the posterior hypophysis and that the hormones of the posterior hypophysis are formed in the intermediate lobe and from there are passed into the neurohypophysis; the basophilic cell infiltration would be an increased function of the intermediate part and a manifestation of a neurohypophyseal activation. The author emphasizes that Cushing admits that this interpretation is still only a hypothesis. The author studied this problem on thirty-six patients without hypertension and on twenty-five patients with hypertension. He observed that eighteen of the thirty-six patients without hypertension, that is, 50 per cent, had a basophilic cell infiltration in the neurohypophysis and that the infiltration was quite severe in eight cases (22 per cent). He concludes from this that a basophilic cell invasion may exist in the absence of hypertension. Of the twenty-five patients with hypertension twenty-four, or 96 per cent, had a basophilic cell infiltration, but it could be considered rather severe in only fifteen cases, or 60 per cent, and it was really severe in only six cases. The author concludes that the interpretation of the basophilic cell invasion is still obscure, for, although the studies on this material corroborated Cushing's claim of an increased neurohypophyseal basophilia in hypertensive conditions, they indicated also that considerable basophilic invasion may exist in patients without hypertension and that in patients with hypertension the basophilic invasion may be only slight.

Cevitamic Acid in Treatment of Colitis.—Hetényi says that two factors induced him to resort to cevitamic acid in the treatment of severe colitis; namely, the hemostatic effect of cevitamic acid and the observation that the diet of patients with this disease frequently has been deficient in vitamin C. He employed the treatment in seven cases. The patients were given at first daily and later every second day an intravenous injection of 150 mg. of cevitamic acid. The author reports the clinical histories of two patients in whom the cevitamic acid proved especially helpful and states that in four other cases the results were likewise good, although not quite as favorable as in the two others. In one case the treatment was ineffective.

Medizinische Klinik, Berlin

31: 1321-1352 (Oct. 11) 1935. Partial Index

Causes of Sudden Death in Operative Interventions That as Such Are Without Danger. A. M. Marx.—p. 1327.
*Aminopyrine in Treatment of Residual Hematuria After Nephritis. K. Hitzenberger.—p. 1331.
Pelvic Kidney. H. Weingarten.—p. 1332.
*Case of Superfetation. L. Sussi.—p. 1334.
*Diuretic Action of Smoking of Tobacco. A. Wenusch and R. Schöller. —p. 1336.

Aminopyrine in Treatment of Residual Hematuria.—Hitzenberger says that, since Eppinger and his collaborators demonstrated that aminopyrine reduces the permeability of the membranes, he decided to use it in the treatment of postnephritic hematuria, reasoning that the usual explanation of the etiology of this form of hematuria makes this action of aminopyrine seem desirable. It is generally believed that the glomerular capillaries become impaired by a deficiency in blood perfusion and that, when the blood returns, some erythrocytes pass the capillary membrane and enter the urine. The author describes the clinical histories of six patients with postnephritic hematuria, in whom medication with aminopyrine (from 1.5 to 3 Gm. daily) either reduced the hematuria considerably or counteracted it entirely.

Case of Superfetation.—Sussi points out that the question of the possibility of superfetation has been frequently the subject of discussions. After citing the opinions of Galen, Hippocrates, Aristotle and Pliny, he shows that, on the basis of present-day knowledge, the possibility of a superfetation depends on the possibility of an ovulation during pregnancy, and recent biologic experiments have proved this possibility. To be sure, there still remains the question of nidation. After discussing the various factors that enter into the problem of nidation during an existing pregnancy, the author reports a case that he considers a true superfetation. A primipara, aged 32, gave birth to a full-term boy and twenty minutes later to a living female fetus of about the sixth fetal month. The woman stated that she had had only two cohabitations, the first about twenty days after the last menstruation and the second approximately five months before delivery. There was a great difference in the sizes and in the weights of the fetuses, the ratio being about 7:1, and there was also a considerable difference in the two placentas. As further proof that this was not an ordinary twin birth, the author cites the great differences in the roentgenologic aspects of the two fetuses. He reaches the conclusion that this was a true case of superfetation.

Diuretic Action of Smoking.—Wenusch and Schöller describe tests on the diuretic action of the smoking of tobacco. Careful attention was paid to all factors that might influence the diuresis. The persons subjected to these tests were given for several days the same amount and the same types of food and drink, and their mode of living was likewise made uniform during the test period. Moreover, the body temperature, the respiratory and pulse frequencies and the blood pressure were carefully controlled. The first tabular report indicates that a considerable diuresis is produced by smoking in persons who are not accustomed to smoking. The second table reveals that in persons who are strongly addicted to smoking, although a

diuretic action is noticeable, it is not as pronounced as in persons who do not smoke at all or who smoke only occasionally. The third table shows that an incipient diuresis turns into the opposite as soon as signs of nicotine intoxication appear. The authors think that the knowledge gained in these tests may attain practical importance if, for instance, persons who are strongly addicted to smoking are suddenly compelled to stop it, as in case of an operation. They think that in these cases the abolishment of this diuretic component should be given consideration and, if necessary, should be compensated by medication.

Wiener Archiv für innere Medizin, Vienna

27: 319-478 (Sept. 20) 1935. Partial Index

*Osteitis Fibrosa Cystica of Parathyroid Origin: Considerable Improvement Following Ovariectomy. C. J. Parhon and Tomorug.—p. 327.
Cardiac Echinococcus: Case. T. Saglam.—p. 347.
*Roentgen Treatment of Patients with Lymphogranulomatosis (Hodgkin's Disease). G. Schwarz.—p. 353.
Prognosis of Hypertension on Basis of Vascular Changes in Fundus Oculi. J. Brana and P. Radnai.—p. 371.
Clinical Aspects of Aortitis in Late Syphilitic Disturbances of Central Nervous System. L. Lazarovits.—p. 385.

Ovariectomy in Osteitis Fibrosa Cystica of Parathyroid Origin.—Parhon and Tomorug report the case of a woman, aged 30, whose bones fractured readily and were extremely flexible. There was slow consolidation of the bones after the fractures. Roentgenoscopy disclosed calcium deficiency of the hip joint, whereas the examination of the blood revealed increased calcium content. The condition was diagnosed as osteitis fibrosa cystica, or, on the basis of Lièvre's terminology, as parathyroid osteosis. The patient was given calcium, epinephrine and ultraviolet irradiations, and after that the consolidation of the fractured bones was somewhat better. Later the patient consented to a bilateral ovariectomy, which had been suggested to her previously. One of the ovaries was found to be twice the size of a normal ovary. After this intervention the patient felt at first extremely weak, but later the condition of the vertebral column did not become further exacerbated, the patient felt better and suffered no more fractures, and her movements were considerably freer. Roentgenoscopy of the bones of the arms disclosed deformities of the diaphyses and swellings at the ends. At these sites the normal structure of the bones was replaced by cystic formations. The epiphyses of these bones were thickened and less dense. The same change was present also on the upper end of the femur. Roentgenoscopy of the skull disclosed considerable thickening of the temporal and frontal bones, thinning of the walls of the sella turcica and a lengthening and deepening of the sella. Examination of the parietal bones revealed nodules, the center of which had increased calcium content. The authors are convinced that this is a case of osteitis fibrosa cystica of parathyroid origin. Although they do not recommend ovariectomy for all women with this disorder, they emphasize that in this case ovariectomy resulted in a considerable improvement. They stress that the parathyroids are not the only glands that are involved in the calcium metabolism and think that the ovaries, the thyroid, the hypophysis, the adrenals and perhaps still other organs play a part. They think that the ovaries might play a part in the decalcification of the bones and in the elimination of the calcium from the organism. This would explain the renewed calcium deposit following their removal. The calcium content of the blood was reduced following the castration.

Roentgen Treatment of Patients with Hodgkin's Disease.—Schwarz emphasizes that there are two procedures to be avoided in the roentgen therapy of Hodgkin's disease; namely, the application of a large single dose to a circumscribed field and total irradiation with a large dose. In discussing how roentgen therapy of Hodgkin's disease should be done, the author gives the following general rules: 1. Each focus should be irradiated. 2. Irradiation should be done in the fractional manner at one or two day intervals. 3. The sizes of the fields should not exceed 800 sq. cm.; that is, they should be about 24 by 30, 18 by 40 and so on. 4. The focal doses should be 50, 80 or, at the most, 100 roentgens, which implies that the surface doses should not exceed 250 roentgens. 5. The tolerance of the skin, the status of the blood and the general reaction (nausea, fever) should be watched. 6. The patient should be kept under constant control for the appearance of new foci. The author illustrates with case histories that the ray sensitivity of lymphogranulomatous formations differs greatly. He says that he saw a mediastinal tumor disappear shortly after the fractional application of a total focal dose of 600 roentgens, whereas in other cases mediastinal tumors required total focal doses of 2,000 roentgens. The heart of the patient should as much as possible be excluded from the irradiation. The difference in ray sensitivity and other factors indicate that the roentgen treatment of Hodgkin's disease cannot be done according to rigid rules, but that individualization is necessary. The treatment must take account not only of the course of the disease, that is, whether it is acute, subacute or chronic, but also of the localization of the glandular swellings. The severity of the roentgen intoxication differs greatly in the individual patients. However, it has been found that intravenous as well as oral liver therapy reduces the severity of the symptoms of intoxication. It is further pointed out that, if the foci of lymphogranulomatosis become "refractory" in the course of prolonged roentgen treatment, the torpidity can be counteracted by the intravenous administration of thorium X. This radioactive substance emits alpha rays. Since it is well known that one type of rays sensitizes to another type, the combined administration of roentgen rays and of radioactive thorium seems advisable in some cases. In the conclusion the author points out that there are two factors which are especially detrimental to patients with Hodgkin's disease: pregnancy and the climate at high altitudes. Since these factors are likely to cause rapid progress of the disease or the generalization of the formerly localized process, they must be avoided in patients with Hodgkin's disease.

Wiener klinische Wochenschrift, Vienna

48: 1231-1278 (Oct. 11) 1935. Partial Index

*Cause of Death in Intestinal Occlusion. F. Starlinger and R. Scholl.—p. 1232.
Lymphoma of Prostate. C. Wegelin.—p. 1236.
Adjustable Spinal Anesthesia According to Kirschner. L. Stecher.—p. 1238.
*Blood Transfusion During Childhood and Behavior of Erythrocytes and of Hemoglobin Value Following Transfusion. W. P. Schäffer.—p. 1265.

Cause of Death in Intestinal Occlusion.—Starlinger and Scholl state that observations on more than 250 necroptically corroborated cases of intestinal occlusion indicate that peritonitis is the cause of most fatalities in intestinal occlusion, pneumonia and circulatory failure being the other chief causes. In the last analysis, even the fatal outcome of peritonitis is really a circulatory collapse. They show that uncomplicated intestinal occlusion, which as yet has caused neither peritonitis nor destruction of the intestinal wall, is accompanied by a severe disturbance in the intermediate and sodium chloride metabolisms, which in turn are partly the result of a severe hepatic impairment and lead to severe dehydration of the tissues. Thus there develops an inspissation of the blood, a capillary stasis, a continuous decrease in the amount of the circulating blood and a failure of the so-called venopressor mechanism, which plays an important part in the maintenance of the circulation. Following a description of observations on dogs, the authors conclude that the failure of the circulation is the chief cause of death in intestinal occlusion. In accordance with this knowledge they advise early surgical treatment, which should aim at the smallest possible intervention. Moreover, attempts should be made to counteract the metabolic disturbances, to promote the hepatic function and to support the circulation. They advise that sodium chloride be administered in the form of hypertonic solutions, 5 per cent solutions of dextrose together with small quantities of insulin and blood transfusions. If peritonitis has already developed, peritonitis serum should be administered. To stimulate diaphragmatic respiration and the circulation, carbon dioxide should be given in carefully adjusted doses. As soon as the intestinal obstruction has been counteracted, peristalsis should be stimulated.

Blood Transfusion During Childhood.—Schäffer points out that the indications for blood transfusion become steadily more numerous. He says that until three years ago his clinic employed chiefly citrated blood, but since then native blood has been transfused by means of Lampert's amber apparatus. He considers from 10 to 12 cc. of blood per kilogram of weight the minimum to be given in children and says that this quantity can be increased up to 30 cc. and, in exceptional cases, even up to 40 cc. The author considers the various forms of anemia the chief indication for blood transfusions. In blood tests performed in children with anemia, he found that the erythrocytes and the hemoglobin content showed a considerable increase immediately after the transfusion. This high level was maintained for from two to three days, but after that there was a decrease, particularly in the number of erythrocytes. Between the twelfth and eighteenth days the erythrocytes sometimes reached the pretransmission values, but after that there was again an increase, which continued for several weeks and at the end of which the values were like those immediately after the transfusion or even higher. Nurslings were an exception to this rule in that this process took a more rapid course. In septic conditions the erythrocytes showed a different behavior from that in anemia, but when the transfusion was done early there was a favorable influence on the disease process. The results of blood transfusions were not satisfactory in tuberculosis of the bones. The author cites four cases in which citrated blood was used and in which complications developed. However, although no complications arose in the large number of cases in which native blood was given, the author thinks that the complications cannot be entirely ascribed to the citrated blood.

Zeitschrift für klinische Medizin, Berlin

128: 455-604 (Sept. 12) 1935. Partial Index

Cardiac Disturbances in Case of Pulmonary Embolism. D. Scherf and E. Schönbrunner.—p. 455.
Changes in Number of Erythrocytes in Hepatic Diseases. H. Kent and T. Rubel.—p. 472.
*Splenectomy in Treatment of Varicose Hemorrhages During Cirrhosis of Liver. E. Mandel and G. Marcus.—p. 504.
Problem of Transfer of Bacteria from Blood Stream into Lymph. H. Kunz and H. Popper.—p. 568.
Treatment of Meningitides with Derivatives of Pyrazolon. E. Risak. —p. 583.

Splenectomy in Treatment of Varicose Hemorrhages in Cirrhosis of Liver.—Mandel and Marcus point out that hemorrhages from varices in the stomach and esophagus, which develop after circulatory disturbances in the region of the portal vein, have been treated with extirpation of the spleen. Such varices develop in circumscribed and in general stasis. They represent the collateral channels of the portal vein. Thus they are always present in cases of thrombosis of the splenic vein and consequently this disturbance is characterized by severe gastro-intestinal hemorrhages. The literature reports a number of cases of thrombosis of the splenic vein in which splenectomy was done with good results. Splenectomy has been recommended also for the varices that develop in the course of cirrhosis of the liver. If it is assumed that the development of varices in cirrhosis of the liver is at least partly caused by the chronic generalized stasis of the portal vein, it seems natural to assume that an eventual favorable effect of splenectomy is to be found in hemodynamic factors like those that exist in thrombosis of the splenic vein, that is, in a localized stasis. However, an influence on the varices of the stomach and of the esophagus is conceivable only if there exist connections between the splenic vein and the varices of the esophagus and stomach. For this reason the authors decided to study the anatomy of this venous region. After mentioning the connections that normally exist between the esophageal veins and the splenic vein, they point out that these anastomoses, which normally are extremely fine, become dilated and tortuous when they become collaterals in case of cirrhosis. They describe their observations in four cases of cirrhosis of the liver. Then they point out that, in addition to the clarification of the anatomic conditions, the direction of the blood currents in this venous region is important. They are convinced that the currents in this region are dependent on many different pressure fluctuations, the more so since the branches of the portal vein are without valves. If the flow through the liver is inhibited by a cirrhotic process, the splenic blood passes through the collateral channels in the region of the stomach and the esophagus. Thus, if splenectomy is done, a large portion of the blood that passes through the varices is eliminated, and the veins of the mucous membrane are relieved of some of their load. Moreover, it is possible that the removal of the spleen changes the pressure conditions in the splenic vein and its collaterals in such a manner that blood from gastro-intestinal veins, which normally would enter the portal vein, passes by way of the stump of the lienal vein and its anastomoses into the region of the cava inferior. The authors were able to demonstrate such connections in all cases. Theoretical reasoning permits the conclusion that splenectomy reduces the load of the varices and thus also the danger of hemorrhage.

Sovetskaya Vrachebnaya Gazeta, Leningrad

Aug. 30 (No. 16) pp. 1241-1320 1935. Partial Index

Pathogenesis of Gastritides and Their Relation to Various Body Systems. M. P. Konchalovskiy, V. N. Smotrov and Kh. Kh. Vlados.—p. 1241.
Symptoms of Gastritides. P. A. Lurya.—p. 1256.
*Roentgen Diagnosis of Chronic Gastritis. S. A. Reinberg.—p. 1267.
Diagnostic Errors in Diseases of Organs of Nutrition: Rôle of Roentgen Study in Some. O. O. Den.—p. 1277.
Gastric Duodenal Ulcer in Children. A. Ya. Dukhanov.—p. 1289.

Roentgen Diagnosis of Chronic Gastritis.—To bring out the mucosa in the stomach, Reinberg advises introduction of small amounts of a thin watery suspension of barium sulfate. It does not provoke secretion of gastric juice. He advises emptying of the stomach just before the examination. Manual palpation of the stomach assists in the distribution of the contrast material. Fluoroscopy is to be followed by the taking of serial films. The roentgen diagnosis of chronic gastritis lags far behind the excellent results obtained with the roentgen diagnosis of gastric and duodenal ulceration and tumors of the stomach. Chronic gastritis is not a definite clinical picture but a symptom complex. Gastroscopic or gastrophotographic control of roentgen diagnosis of chronic gastritis reveals a percentage of correct diagnoses between 20 and 50 per cent, as given by various authors. The borderline between the normal and the pathologic appearance of the gastric mucosa has not been clearly determined. The hypertrophic form of gastritis is more readily demonstrable than the atrophic. The increase in the caliber of the folds is of significance only when the furrows between them are widened. This is accompanied by a diminution in the number of the folds so that, instead of four or five, there may be two or three thick prominent ridges. Atrophic gastritis, on the contrary, is made manifest by the formation of a delicate relief with a decrease in the height and width of the folds and an increase in the width of the furrows. Particularly valuable for the diagnosis is the rigidity of the folds on palpation as contrasted with the elastic "autoplastic" behavior of the normal gastric mucosa. The persistence of these signs on a repeated roentgenologic examination has a determining value in arriving at the diagnosis of chronic gastritis. High grade edema of the mucosa and the submucosa is readily visualized in the film. Elevation of the mucous membrane, the size of a pea, is likewise recognizable in the film. In the author's experience, gastro-enterostomy is regularly followed by a chronic gastritis, which appears soon after the operation and may persist for years. The notion that hypertrophic gastritis is accompanied by hypersecretion and hyperacidity, while the atrophic form is accompanied by hyposecretion and hypo-acidity, is not correct. It appears that changes in the secretory function are not determined by the anatomic picture. Pyloric gastritis and diffuse gastritis are, as a rule, associated with a duodenitis and, not infrequently, with an enteritis of the adjacent small intestine. The author concludes that the roentgenologic diagnosis of chronic gastritis is a harmless, physiologic, practical method, the principal fault of which lies in its inability to recognize all the cases of gastritis. The common error is to include normal appearances among the pathologic.